# ESSAYS ON AUTHORIZED SHARES, STOCK SPLITS, AND TOP-UP OPTIONS

HILMI SONGUR

International Business

APPROVED:

William B. Elliott, Ph.D., Chair

Erik Devos, Ph.D.

James E. Upson, Ph.D.

Gary Braun, Ph.D.

Bess Sirmon-Taylor, Ph.D.
Interim Dean of the Graduate School

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# Dedication

To my wife *Iliana* for her endless love, support, sacrifice, patience, and encouragement during my doctoral program.

To my parents *Nadiye Songur* and *Durmuş Songur* for their love, encouragement, and unconditional support with my studies.

# ESSAYS ON AUTHORIZED SHARES, STOCK SPLITS, AND TOP-UP OPTIONS

by

HILMI SONGUR

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## Abstract

This dissertation consists of two separate but broadly related essays investigating the role of authorized shares in corporate events. In the first essay, I examine the relation between management`s power to issue new shares of stock and stock split abnormal announcement returns. I posit that the mechanical reduction in excess authorized shares (EAS) caused by a stock split, decreases management`s power to issue stock. I argue that this results in lower agency costs and thereby increases shareholder`s value. After controlling for other factors, and consistent with my hypothesis, I find that the pre-split ratio of unissued authorized shares to total outstanding shares (Excess Authorized Ratio – EAR) is positively related to the abnormal stock split announcement returns. My analysis suggests nontrivial economic benefits accrue to shareholders from a reduction in management's power to issue stock and firms that have a higher pre-split EAR benefit the most. In the second essay, I investigate the role of top-up options granted by target managers to bidders in tender offers. A top-up option enables bidders to bypass target shareholder consent and allows for relatively fast execution of the tender offer. My evidence, from 456 tender offers announced during 2000-2012 suggests that deals with top-up options are detrimental to both bidder and target shareholders, when compared to tender offers without the top-up feature. This effect seems to be concentrated in the pre-2007 period. After 2006 a large majority of tender offers include top-up options. I also find that the use of top-up options is negatively related to the use of lock-up options in the early period. In the later period of my sample, when lock-up options were no longer used in tender offers, toeholds are negatively related to the use of top-up options. Moreover top-up options increase the speed of deal completion and are associated with less hostility, higher target free cash flows, and higher termination fees. Overall, I conclude that the use of top-up options is most consistent with the anti-competitive hypothesis.

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# Chapter 1

# Introduction

This dissertation consists of two separate, but broadly related essays. In the first essay (Chapter 2), I examine the relation between management`s power to issue new shares of stock and stock split abnormal announcement returns. I posit that the mechanical reduction in unissued (excess) authorized shares caused by a stock split, decreases management`s power to issue stock. I argue that this results in lower agency costs and thereby increases shareholder`s value. After controlling for other factors, and consistent with my hypothesis, I find that the pre-split ratio of unissued authorized shares to total outstanding shares (Excess Authorized Ratio) is positively related to the abnormal stock split announcement returns. I also examine the agency cost variables and their relation to Excess Authorized Ratio. I find that the Excess Authorized Ratio is positively related to the agency cost proxy SG&A Expense ratio which is selling, general, and administrative expenses divided by total assets and is statistically significant. This appears to indicate that the higher Excess Authorized Ratio firms have higher agency costs. My analysis suggests nontrivial economic benefits accrue to shareholders from a reduction in management's power to issue stock and firms that have a higher pre-split excess ratio benefit the most.

In the second essay (Chapter 3), I investigate the role of top-up options granted by target managers to bidders in tender offers. A top-up option enables bidders to bypass target shareholder consent and allows for relatively fast execution of the tender offer. My evidence, from 456 tender offers announced during 2000-2012 suggests that deals with top-up options are detrimental to both bidder and target shareholders, when compared to tender offers without the top-up feature. This effect seems to be concentrated in the pre-2007 period. After 2006 a large majority of tender offers include top-up options. I also find that the use of top-up options is negatively related to the use of

lock-up options in the early period. In the later period of my sample, when lock-up options were no longer used in tender offers, toeholds are negatively related to the use of top-up options. Moreover, top-up options increase the speed of deal completion and are associated with less hostility, higher target free cash flows, and higher termination fees. Overall, I conclude that the use of top-up options is most consistent with the anti-competitive hypothesis.

# Chapter 2

# Splitting to Power to Issue: The Case for Authorized Shares

## 2.1 Introduction

A central area of research in financial economics is the study of the principal-agent relationship. A fundamental message from that literature is that managers, if not monitored and/or constrained by shareholders, could make decisions that are inconsistent with the maximization of shareholder wealth[1]. In this paper, my objective is to expand that literature by examining management's power to issue stock.[2] I examine the role that the amount of excess authorized common shares relative to issued shares of a corporation plays in limiting this power. Specifically, I study the announcement of a stock split because such an event will serve to reduce the firm's excess authorized shares, thereby reducing this managerial power to issue stock.

In my study, the announcement of a stock split is a use of excess (i.e. unissued) authorized shares (i.e., a 2-for-1 split will double the shares outstanding and thereby reduce the number of authorized, but unissued, shares). While this use may not be the *raison d'être* for the stock split announcement, at the margin, it may affect the decision to split. A split clearly affects the amount of excess authorized shares and, in turn, limits the manager's power to issue new stock in the future. Consider the following statement made by Hewlett Packard Company in their DEF 14A filing (proxy statement), dated January 25, 2001:

> "The Board of Directors believes that the availability of additional authorized but unissued shares will provide the Company with the *flexibility to issue common stock* for a variety of corporate purposes, such as to effect *future stock splits in the form of stock dividends, to make acquisitions through the use of stock, to raise equity capital, to adopt additional employee*

[1] Jensen and Meckling (1976), and Jensen (1986).

[2] In her paper titled "The Power to Issue Stock," Ganor (2011) describes in detail the legal aspects of authorized common stock as it relates to a firm's management and shareholders.

*benefit plans or to reserve additional shares for issuance under such plans and under plans of acquired companies.*" [italics added for emphasis; for the entire proposal see the Appendix 1]

This paragraph from HP's proxy statement is but one of numerous similar statements by firms that wish to increase their authorized shares. Of particular note, the firm cites an increase in "*flexibility to issue common stock*" as the primary rationale for its proposed increase in authorized shares. At the time of HP's proposal, the firm had 4.8 billion shares authorized and a total of 2.48 billion shares outstanding or reserved, leaving 2.32 billion shares of authorized but unissued shares. Granted, 2.32 billion excess authorized shares are not quite enough to engage in a two-for-one stock split (which the firm had done seven times previously, most recently only 4 months prior to this proposal). However, management was not asking to bring the authorized shares up to 5 billion, they were requesting an increase to 9.6 billion, a doubling of the current number of authorized shares. Thus leaving ample opportunity for HP's management to engage in activities other than a stock split, such as stock-based mergers or a variety of anti-takeover measures. It seems clear from statements such as HP's, that management is cognizant of, and cares about the level of excess authorized shares.

The total authorized shares, stated in the firm's certificate of incorporation (aka, corporate charter), are the number of common shares that may be issued (i.e., total shares outstanding may not exceed total authorized shares). This figure is set at the time of incorporation and may only be changed through a vote of the shareholders. I define excess authorized shares (hereafter, *EAS*) as the authorized shares minus shares outstanding. The 'excess authorized ratio' (hereafter, *EAR*) is the EAS scaled by shares outstanding.

When a stock split occurs, a portion of the EAS become part of the shares outstanding. For example, prior to a two-for-one split of a firm with 100 shares outstanding and 1,000 shares

authorized the EAR is 9 ([1,000 – 100]/100). After the split, the firm will have 200 shares outstanding and the EAR will be 4 ([1,000-200]/200). This reduction in EAR reduces management's flexibility to engage in activities that require shares, without first obtaining shareholder approval. I hypothesize that the reduction in EAR that results from a stock split will help explain the abnormal stock split announcement returns. Accordingly, I anticipate that the market will react more positively to firms with a higher pre-split EAR, since managers of such firms have relatively more power to issue shares than managers of firms with a lower EAR. Following the announcement of a stock split, shareholders of high EAR firms face lower agency costs, which should result in an increase in firm value.

My sample is comprised of NYSE/AMEX/Nasdaq stock splits announced between 1998 and 2011. I hand collect the number of authorized shares from 10Ks and proxy statements on the Securities and Exchange Commission's (SEC) Edgar filings database.

To examine the effect of excess authorized shares on stock split announcement returns, I first sort the sample by EAR and examine the market reaction to stock split announcements for firms in the upper and lower quartile. On average, the market reacts more positively to split announcements of firms in the upper quartile (Cumulative Abnormal Return [CAR] = 4.95%) when compared to firms in the lower quartile (CAR = 2.41%) in a five day event window surrounding the announcement. The 2.54% difference between the mean CARs of these two quartiles is statistically significant at five percent level (t=2.52).

In the second portion of the analysis, I examine the cross-sectional variation in split announcement CARs using a multivariate regression framework. Consistent with my hypothesis, I find that the pre-split EAR is positively related to the abnormal returns and is statistically significant. This appears to indicate that the market interprets the split announcement and

concomitant reduction in excess authorized shares as a more positive signal for firms that had greater pre-split excess authorized shares. Accordingly, managers are more constrained and therefore must obtain shareholder approval before engaging in some ventures that require the use of shares (such as mergers, seasoned equity offers, anti-takeover strategies, etc…).

In the third portion of the analysis, I examine the agency cost variables and their relation to EAR. Consistent with my hypothesis, I find that the pre-split EAR is positively related to the agency cost proxy *SG&A Expense ratio* which is selling, general, and administrative expenses divided by total assets and is statistically significant. This appears to indicate that the higher EAR firms have higher agency costs.

Collectively, my findings suggest nontrivial economic benefits from the reduction in managements' power to issue stock. My primary contribution is that, to my knowledge, my paper is one of the first in the finance literature that addresses the link between excess authorized common shares (or managers' power to issue stock) and stock splits announcement returns.[3] Economic theory suggests that stock splits are purely cosmetic events, however, the literature finds a persistent abnormal positive announcement return. Various explanations for this apparent deviation from the efficient markets hypothesis have been proposed (Grinblatt, Masulis, and Titman 1984; Asquith, Healy, and Palepu, 1989; McNichols and Dravid, 1990; Nayak and Prabhala, 2001). Signaling, (Grinblatt, Masulis, and Titman [1984] and Brennan and Copeland [1988]), reduction in information asymmetry (Ikenberry, Ranine, and Stice [1996], Desai and Jain [1997], and Ikenberry and Ramnath [2002]), and tax option value (Lamoureux and Poon [1987]) have all been supported. My study adds to this literature with a heretofore undocumented effect,

[3] Bhagat, Brickley, and Lease (1986) study the announcement return effects of proposals by management to increase the amount of authorized shares in general as well as the frequency of activities that require excess authorized shares.

namely a reduction in the agency costs between managers and shareholders through the decrease in the amount of excess authorized shares.

The remainder of this chapter is organized as follows. Section 2.2 discusses the motivation. Section 2.3 present the hypotheses. Section 2.4 presents excess ratio measures. Section 2.5 discusses my sample selection process and the characteristics of the sample. Section 2.6 elaborates empirical results of the effect of excess ratio on split announcement cumulative abnormal returns and robustness checks. Section 2.7 concludes the chapter.

**2.2 Discussion and Motivation**

The finance literature has given scant attention to the impact that the number of authorized shares has on corporate decisions. Part of this neglect may be due to the paucity of the variable in the primary databases that are used by researchers[4]. However, this lack of easily accessed data should not limit our inquiry. In short, this issue is important because, without sufficient EAS, management must first go to the shareholders to obtain permission to increase the number of authorized shares stated in the Certificate of Incorporation.[5] With a large number of EAS, managers have a great deal of flexibility.[6] However, if the amount of EAS is limited, shareholders retain more power. Clearly, we are dealing with a matter of agency costs.

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[4] For instance Carter, Lycnh, and Tuna (2007) cites that the reason why they can`t use authorized shares in their study as the lack of availability of data in electronic format.

[5] Delaware General Corporation law states that any changes to the Certificate of Incorporation must be approved by the majority of shareholders (*8 Del. C. 1953, § 242; http://delcode.delaware.gov/title8/c001/sc08/index.shtml*). Not all states have similar laws. The development of our construct and hypotheses relies upon the laws as they hold for the state of Delaware and the other states that have similar laws. Luckily for my analysis, the majority of firms are incorporated in Delaware or states that have laws similar to those in Delaware.

[6] Some of the flexibility granted by Delaware law is limited by exchange listing rules. Both the NYSE and the Nasdaq require that, for non-cash transactions, an issue of new shares equal to or greater than 20% of current outstanding shares must be approved by shareholders prior to the new share issuance (e.g., see the NYSE Listed Company Manual; *http://nysemanual.nyse.com/LCMTools/PlatformViewer.asp?selectednode=chp%5F1%5F4%5F10&manual=%2Flcm%2Fsections%2Flcm%2Dsections%2F*). However, issues for cash, in either public or private offers, face no such constraints, nor do certain takeover strategies. For example, the implementation of a top-up option (see Ganor [2011]), by virtue of the fact that the firm becomes private and is no longer listed, would not face the constraints imposed by the exchanges. Further, the 20% limitation is for a single transaction. As such, a firm

To my knowledge, Bhagat, Brickley, and Lease (1986) are the only other researchers to have focused their study on authorized shares. Specifically, they hypothesize that if the number of authorized shares is binding, the abnormal announcement returns associated with an increase in the number of authorized shares will capture the likelihood of a subsequent event (e.g. an SEO or stock split). As Bhagat et al. point out, excess authorized shares are an essential precursor to many widely studied activities in corporate finance (e.g. SEOs, stock-based mergers, stock splits, changes in ownership and control [e.g. such as poison pills and the top-up option]). More attention has been paid to the concept of authorized shares in the legal literature. Recently, Ganor's (2011) work on the subject, titled 'The Power to Issue Stock,' lays out and tests the premise that excess authorized shares empower managers to engage in activities that may not be in the interest of shareholders. In particular, she examines the use of poison pills, top-up options, and white squires as means by which managers may use EAS to achieve a desired outcome during the battle for control of a firm. Ganor also provides limited empirical evidence on the excess-ratios of non-financial companies incorporated in Delaware following their initial public offering. She finds high excess ratios (with means over 5) for the firms in her sample. Nevertheless she does not find any significant correlations between the excess ratio and firm size.

Delaware General Corporation Law states that the number of authorized shares must be specified in a firm's certificate of incorporation.[7] As mentioned earlier, the certificate of incorporation cannot be changed without a majority vote of the shareholders and, as a result, the maximum possible shares outstanding is temporarily constrained by the number of shares authorized in the certificate of incorporation. The announcement of a stock split results in the

could engage in multiple stock-based mergers, each of which require less than the 20% share limit, without triggering the requirement for shareholder approval.

[7] *8 Del. C. 1953, § 102, http://delcode.delaware.gov/title8/c001/sc01/index.shtml*

transfer of a portion of the excess authorized shares to shares outstanding. While this may not be the *raison d'être* for the stock split announcement, a split clearly affects the amount of excess authorized shares, and in turn, limits the manager's power to issue new stock in the future.

Although many papers that examine stock splits suggest that stock splits are merely cosmetic (e.g. Barker, 1956; Lamoureux and Poon, 1987; Brennan and Copeland, 1988; Easley, O'Hara, Saar 2001), in my opinion, this is far from the case. In fact, one of the few real changes to the firm as a result of the split is that a portion of the EAS are used up. Because of this reduction, managers have less flexibility to issue new shares in the future. I hypothesize that this reduced flexibility may reduce the agency costs that shareholders face and thus result in an increase in the value of the firm. In a two-for-one stock split (one of the most common split factors), the number of shares outstanding is doubled (regardless of whether the split is accounted for as a large stock dividend or a stock split) and, as a result, the amount of unissued authorized shares is reduced. For example, if a firm has 125 million shares authorized and 25 million outstanding, there are 100 million shares available for issue in the future. With 100 million excess authorized shares, the management of the firm could grant a top-up option to a friendly acquirer in a tender offer. Under Delaware law, the top-up option allows a management friendly bidder to freeze-out the remaining equity owners and allows the firm to use a short-form merger, which does not require a shareholder meeting. However, in order for a management friendly bidder to acquire the 90% ownership necessary to engage in a top-up option, management must have the ability to issue 100 million new shares to the friendly bidder (assuming that the bidder has already acquired at least 50% ownership of existing old shares).[8] Once issued, the remaining shareholders (whose position has been eroded to

[8] Typically, the friendly bidder obtains majority ownership through a tender offer (in the example that would be 12.5 million shares). After a successful tender offer, the target firm issues enough additional shares to the bidder, at the tender offer price, such that the bidders' ownership reaches 90% (in the example this would require that an additional 100 million shares be issued to the bidder). Thus, after the top-up option, the bidder owns 112.5 million shares, or a

only 10% of the value of the firm) have no power to halt the merger.[9] Nevertheless, after a two-for-one stock split, the number of unissued authorized shares will drop to 75 million and management will no longer be able to engage in a top-up option (this is but one example of how a split may constrain managements power over shareholders).[10] So, regardless of the primary rationale for the stock split, as a result of the reduction in excess authorized shares, shareholders have gained power and managers have given up power. Presumably managers are aware of this trade-off and would not engage in the split unless the expected gain to managers is substantially greater than the certain loss of power to issue shares (while not the focus of this paper, for further development of a model that attempts to describe how a firm could have an optimal level of excess authorized shares see Appendix 2).

If management is able to gain shareholder approval for an increase in the level of authorized shares with 100% certainty, then does the reduction caused by a stock split matter at all? This is a fair question and clearly, it is relatively rare that any type of proposals, supported by management, are turned down by shareholders (Maug and Rydqvist, 2001; Gillan and Starks, 2007). However, there are some cases where proposals to increase the level of authorized shares have been voted down. In 2009, American International Group (AIG) attempted to increase its level of authorized shares from 5 billion to 9.225 billion. At the time of the vote, AIG had approximately 2.7 billion shares outstanding. It appears that after having lost more than 95% of its value in 2008, shareholders were in no mood to give management any additional excess authorized shares. Another recent example was a proposed increase of authorized shares from 25 million to 75 million (shares outstanding as of the date of the proxy stood at just under 18.1 million)

90% stake in the firm. As a result of the top-up option, the old shareholders position has been diluted to only a 10% stake in the firm.

[9] For a more detailed description of the top-up option see Ganor (2011).

[10] Of course, the number of shares authorized may be changed, but not without shareholder consent in Delaware.

by the management of The Andersons Inc. Both firms appear to have been surprised by the failure of the proposed increase.[11] Simply because we observe a small percentage of failed proposals to increase the authorized shares does not imply that all firms are able to increase their authorized shares. It seems likely that management may only recommend proposals that they believe are highly likely to obtain shareholder approval. As such, the observed proposed increases to authorized shares may be censored. Thus, since some proposals are rejected, and there is some evidence that proposals that have a probability of failure may never be brought to a vote, I believe that management is indeed constrained when a stock split causes a decrease in the excess authorized shares.

### 2.3 Hypotheses

My primary hypothesis is that managers of firms with very high levels of EAS potentially have the most to lose during a stock split. Shareholders of firms with very high levels of EAS will enjoy the greatest increase in power (relative to shareholders of firms with lower levels of EAS). As a result, I expect to find two patterns in the abnormal announcement returns surrounding a stock split. First, in total, the abnormal announcement return for a stock split will be higher for those firms with higher pre-split levels of EAS. Secondly, after controlling for other explanations for stock splits, the marginal abnormal announcement return will be higher for those firms that have the highest levels of EAS.

[11] "Mike Anderson (president and chief executive) said the proposal for added shares would have given the company flexibility to raise money to make an acquisition, although there were no immediate plans to issue more shares or use them for business ventures."

"Gary Smith, company treasurer, said most publicly traded firms are authorized to issue three times the amount of stock that they have outstanding. With 18 million outstanding and only 25 million authorized, we're getting kind of tight, he said. Authorization to issue more shares must be given at annual meetings, which made yesterday's vote critical." Excerpted from the Toledo Blade: http://www.toledoblade.com/local/2009/05/09/Andersons-stock-bid-rejected.html

In the following sections, I describe how I measure the EAR as well as the change in EAR, collect my split and authorized shares sample, and conduct my analyses to test my hypotheses.

### 2.4 Measuring Excess Ratio and Change in Excess Ratio

I use two measures of EAS. My first measure is the EAR which I calculate following Ganor (2011) as:

$$EAR = \frac{Total\ Authorized\ Shares - Outstanding\ Shares}{Outstanding\ Shares} \tag{2.1}$$

where *Total Authorized Shares* is from the firm's 10K immediately before the split announcement and *Outstanding Shares* is Compustat item CSHO on day -5 relative to the split announcement date.

I also calculate the change in the EAR measure as:

$$\Delta\, EAR = \frac{Post_EAR - EAR}{EAR} \tag{2.2}$$

where, $Post_EAR$ is calculated in a manner similar to *EAR,* however Outstanding Shares is first multiplied by one plus the CRSP split factor.

### 2.5 Data and Sample Construction

To test my hypotheses, I use a sample of firms incorporated in the state of Delaware, which engage in a stock split between 1998 and 2011, inclusive. Laws regarding incorporation and whether or not authorized shares are limited, vary from state to state. To avoid these differences in state law I focus my attention on the sub-sample of firms that are incorporated in the state of

Delaware. Delaware law requires that the number of authorized shares be stated in the corporate charter, and this figure may not be altered without a shareholder vote[12].

Table 2.1 Distribution of by split year and industry

| Panel A. Distribution by split year, Excess Authorized Ratio(EAR) and change in EAR (Δ EAR ) | | | | | |
|---|---|---|---|---|---|
| | | EAR | | Δ EAR (%) | |
| Year | Number of splits | Mean | Median | Mean | Median |
| 1998 | 61 | 2.87 | 2.46 | -22.35 | -62.10 |
| 1999 | 95 | 2.89 | 2.34 | 1.45 | -61.60 |
| 2000 | 127 | 3.05 | 2.51 | 13.42 | -59.52 |
| 2001 | 20 | 2.92 | 2.59 | 23.54 | -59.67 |
| 2002 | 28 | 3.22 | 2.74 | -68.00 | -68.35 |
| 2003 | 30 | 3.04 | 2.78 | -64.40 | -66.73 |
| 2004 | 46 | 2.81 | 2.28 | -40.99 | -64.39 |
| 2005 | 63 | 2.56 | 2.18 | -55.29 | -68.37 |
| 2006 | 37 | 2.76 | 2.64 | -46.95 | -65.03 |
| 2007 | 40 | 2.69 | 2.26 | -52.35 | -69.01 |
| 2008 | 10 | 3.01 | 3.00 | -42.41 | -62.01 |
| 2009 | 4 | 2.30 | 2.48 | -44.15 | -67.55 |
| 2010 | 13 | 3.69 | 2.82 | -60.66 | -67.71 |
| 2011 | 20 | 3.11 | 2.96 | -30.87 | -63.81 |
| Panel B. Distribution by industry | | SIC codes | | Frequency | % |
| Agriculture | | < 1,000 | | 2 | 0.34% |
| Mining | | 1,000-1499 | | 33 | 5.56% |
| Construction | | 1,500-1999 | | 11 | 1.85% |
| Manufacturing | | 2,000-3,999 | | 314 | 52.86% |
| Transportation | | 4,000-4,999 | | 26 | 4.38% |
| Wholesale trade | | 5,000-5,199 | | 17 | 2.86% |
| Retail trade | | 5200-5999 | | 43 | 7.24% |
| Services | | 7000-8999 | | 147 | 24.75% |
| Public Administration | | 9100-9,999 | | 1 | 0.17% |
| Total | | | | 594 | |

I identify this sample by searching through the Center for Research in Security Prices (CRSP) Distributions array for distribution codes 5523 and 5533. This yields an initial sample of

[12]. In untabulated results, when firms incorporated in all states are included, all results remain qualitatively similar to the Delaware only sample. These results are available upon request.

4,861 stock splits. I exclude splits with split factors (CRSP variable FACSHR) of less than one (i.e. only two-for-one or greater splits are included) or greater than five, as well as splits of any firms that are utilities (SIC 4900-4999) or financials (SIC 6000-6999). Following Lin et al. (2009) I filter out dual class firms, ADRs, and exclude splits with a pre-split price smaller than $10. These filters decrease my sample to 1,288 firm-splits. Next, I hand collect the number of authorized shares for each firm from their 10-K filings while I collect proxy and shareholder vote dates from DEF 14A and/or DEFS 14A filings from the SEC's Edgar company filings database. I collect the number of analysts following a stock from The Institutional Brokers' Estimate System (IBES) database. Missing values in the return series and IBES data cause a loss of 177, yielding a sample of 1,011 firm-splits. Of these 1,011 firm-splits, 594 are incorporated in Delaware and become the final sample. All variables are winsorized at the 1 percent and 99 percent levels.

Table 2.1 reports the distribution of the 594 sample firm-splits over time, the EAR, **Δ**EAR, and the two-digit industry classifications. In Panel A, I observe that the number of splits during a given year ranges from 4 (in 2009) to 127 (in 2000). The 2008-2011 period seems to have a lower number of splits than the rest of the sample, which is in line with the general trend of a declining number of stock splits in the aftermath of the 2008 global economic recession.[13] The average EAR during any given year ranges from 2.30 (in 2009) to 3.69 (in 2010) and does not seem to show any temporal pattern. Moreover the median EAR is relatively more stable and ranges between 2.18 (in 2005) and 3.00 (in 2008). I observe a similar pattern for **Δ**EAR and while the mean varies over the sample period, the median remains in a more narrow range. In Panel B, I report two-digit industry distribution of my sample. Manufacturing (SIC code 2000-3999) and Services (SIC code 7000-8999) are the two largest sectors represented in the sample. Firms that operate in the

[13] Minnick and Raman (2013) report that the percentage of firms undertaking stock splits has fallen to less than 1% of all firms in CRSP database in 2009.

Manufacturing industry constitute 52.86% of the sample firms, while firms in the Services industry comprise another 24.75% of the sample.

Table 2.2 Split Sample and Model Variable Descriptive Statistics

Table presents the descriptive statistics of the sample firms and model variables. *EAR, the* ratio of non-outstanding authorized shares to outstanding shares of the splitting firm before the announcement; *Post_EAR* is calculated as (authorized shares minus common shares outstanding times Factor to Adjust Price) / (common shares outstanding multiplied by Factor to Adjust Price); Δ *EAR,* is the change in exchange ratio as a result of the split. *Price per share*, stock price at day -5 relative to the announcement date; *Market cap,* is the market value of the outstanding shares at day -5 relative to the announcement; *Total Sales,* is the annual sales for the issuing firm; *ROA*, is calculated as Net Income divided by total assets; *ROE*, is calculated as Net Income divided by common equity; *BM,* is the book-to-market equity ratio at day -5 relative to the announcement date and calculated as common equity divided by common shares outstanding multiplied by annual share price; *Runup is* price run-up from day -120 to day -2 relative to the declaration date; *# of Shareholders,* shareholders (Compustat item 100); *# of Analysts,* the number of analysts following the stock (from IBES); *Age,* the difference between the split announcement year and the first year firm recorded in Compustat database.

| Characteristic | Mean | Median | Std. Dev. | 75th Percentile | 25th Percentile |
|---|---|---|---|---|---|
| *EAR* | 2.91 | 2.41 | 1.62 | 3.60 | 1.82 |
| *Post-EAR* | 1.77 | 1.19 | 2.06 | 2.05 | 0.65 |
| Δ *EAR (%)* | -23.73 | -64.20 | 1.01 | 0.00 | -72.30 |
| *Total assets ($10^6$)* | 3,247.1 | 785.8 | 6,999.4 | 2,532.2 | 199.9 |
| *Market Cap. ($10^6$)* | 7,742.1 | 2,039.8 | 17,761.7 | 5,829.4 | 832.4 |
| *Total Sales ($10^6$)* | 3,513.2 | 754.7 | 8,071.5 | 2,628.5 | 157.1 |
| *CASH/TA (%)* | 16.5 | 11.4 | 17.5 | 21.3 | 3.7 |
| *ROA (%)* | 5.3 | 7.6 | 13.3 | 11.72 | 3.4 |
| *ROE (%)* | 12.9 | 14.8 | 25.8 | 22.5 | 7.7 |
| *BM* | 0.27 | 0.22 | 0.19 | 0.37 | 0.11 |
| *Price per share* | 81.4 | 73.0 | 40.5 | 96.1 | 53.5 |
| *Split factor* | 1.1 | 1.0 | 0.2 | 1.0 | 1.0 |
| *Runup (%)* | 48.8 | 35.7 | 46.0 | 62.6 | 18.6 |
| *# of Shareholders($10^3$)* | 14.5 | 1.6 | 43.1 | 7.9 | 0.4 |
| *#. of Analysts* | 10.7 | 9.0 | 8.2 | 15.0 | 4.0 |
| *Age (years)* | 15.1 | 11.0 | 12.9 | 19.0 | 5.0 |

Table 2.2 reports descriptive statistics of firm characteristics. I find that the mean (median) EAR is 2.91 (2.41). This suggests that the management of an average (median) firm in my sample can issue almost three (two and half) times more stocks than is currently outstanding without shareholder approval, prior to the split. The mean (median) change in EAR is a negative 23.73% (negative 64.20%) and indicates that splitting firms in my sample decrease their excess authorized ratios as a result of split. The mean (median) pre-split price is $81.40 ($73.00), and the mean (median) split factor is 1.1 (1.00) (i.e., shareholders receive 2.20 [2.00] shares in exchange for one pre-split share). The mean (median) market capitalization prior to the splits is $7.74 ($2.04) billion. The average (median) book-to-market equity ratio is 0.27 (0.22), suggesting that the sample firms tend to have relatively high growth opportunities.

### 2.6 Excess Authorized Ratio and Stock Split Announcement Returns

In this section, I first describe the distribution of split announcement abnormal returns. Next, I present the results of the univariate analysis of firm characteristics and other variables in the model. Finally, I discuss the results of the cross-sectional variation in abnormal announcement returns for the splitting firms.

#### 2.6.1 Announcement Return Analysis

Table 2.3 reports the variation in the abnormal announcement return around a stock split announcement. I condition on various levels of EAR prior to the split announcement. In particular, I examine the announcement return for the highest (Q1) and lowest (Q4) quartile of the pre-split EAR.

Table 2.3. Abnormal returns around split announcement date by EAR Quartiles

Note: Table presents market-adjusted mean (median) cumulative abnormal returns (CARs) for the event periods (0), (0, 1), (-1, 1), and (+2,-2). CARs are market adjusted return where market is CRSP value weighted index. Quartile rankings are based on the EAR. I report differences in means (t- test) and medians (Wilcoxon test). ***, **, *: Significant at the 1%, 5%, and 10% level, respectively.

| Returns | Full Sample (n=594) | Q1 (Upper EAR) (n=148) | Q4 (Lower EAR) (n=148) | Q1 – Q4 Difference |
|---|---|---|---|---|
| | Mean (Median) | Mean (Median) | Mean (Median) | T (Z) |
| *CAR (0)* | 0.0145*** (0.0103***) | 0.0228*** (0.0103***) | 0.0145*** (0.0072***) | 1.55 (1.82*) |
| *CAR (0 +1)* | 0.0303*** (0.0206***) | 0.0364*** (0.0224***) | 0.0200*** (0.0167***) | 1.89* (1.31) |
| *CAR (-1 +1)* | 0.0360*** (0.0231***) | 0.0424*** (0.0271***) | 0.0232*** (0.0188***) | 2.01** (1.55) |
| *CAR (-2 +2)* | 0.0392*** (0.0285***) | 0.0496*** (0.0379***) | 0.0243*** (0.0245***) | 2.52** (1.90*) |

I calculate market-adjusted stock price reactions, over four different event windows (0, 0 +1, -1 +1, and -2, +2) surrounding the split announcement date, where Day 0 is the filing date of the stock split as reported in the CRSP database. I compute the CARs (cumulative abnormal returns) using the market-adjusted return, where the market is the CRSP value-weighted index. In Table 3 the mean (median) five-day market-adjusted announcement return (day -2 to day +2) for my full sample of 594 firm-splits is a statistically significant 3.92% (2.85%). This split announcement return is similar to those found in previous studies (e.g., Grinblatt, Masulis, and Titman, 1984; Ikenberry et al., 1996; and Lin, Singh, and Yu, 2009). The mean (median) five-day market-adjusted announcement return for the highest EAR quartile (Q1) is 4.96% (3.79%) and is significantly different from that for the lowest EAR quartile (Q4), 2.43% (2.45%). This finding supports my hypothesis that market reacts more positively to the split announcement of firms with

higher pre-split levels of EAR (i.e. firms with higher agency costs whose managers have relatively more power to issue stock prior to the split).

### 2.6.2 Univariate Analysis

I sort the sample by EAR and compare and contrast the firm characteristics for those firms that fall into the highest EAR quartile (Q1) and the lowest EAR quartile (Q4). I report test results for differences in means and medians employing a *t*-test and Wilcoxon test, respectively.

In Table 2.4 I calculate the variables as follows: *EAR*, is the ratio of non-outstanding authorized shares to outstanding shares of the splitting firm before the announcement; *Post_EAR* is calculated as (authorized shares minus common shares outstanding times Factor to Adjust Price) / (common shares outstanding multiplied by Factor to Adjust Price); Δ *EAR,* is the change in exchange ratio as a result of the split. *Price per share*, is the stock price at day -5 relative to the announcement date; *Market cap,* is the market value of the outstanding shares at day -5 relative to the announcement; *ROA*, is calculated as Net Income divided by total assets; *ROE*, is calculated as Net Income divided by common equity; *BM,* is the book-to-market equity ratio at day -5 relative to the announcement date and calculated as common equity divided by common shares outstanding multiplied by annual share price; *Runup* is the price run-up from day -120 to day -2 relative to the declaration date; *# of Shareholders*, is shareholders the number of common shareholders; *# of Analysts*, is the number of analysts following the stock (from IBES); *Age,* is the difference between the split announcement year and the first year the firm is recorded in CRSP/Compustat Merged Database.

## Table 2.4 Univariate Comparison of Higher and Lower EAR Firms

Table presents the mean (median) univariate characteristics for splitting firms. Quartile rankings are based on the EAR. *EAR, the* ratio of non-outstanding authorized shares to outstanding shares of the splitting firm before the announcement; *Post_EAR* is calculated as (authorized shares minus common shares outstanding times Factor to Adjust Price) / (common shares outstanding multiplied by Factor to Adjust Price); Δ*EAR,* is the change in exchange ratio as a result of the split. *Price per share*, is the stock price at day -5 relative to the announcement date; *Market cap,* is the market value of the outstanding shares at day -5 relative to the announcement; *ROA*, is calculated as Net Income divided by total assets; *ROE*, is calculated as Net Income divided by common equity; *BM,* is the book-to-market equity ratio at day -5 relative to the announcement date and calculated as common equity divided by common shares outstanding multiplied by annual share price; *Runup* is the price run-up from day -120 to day -2 relative to the declaration date; *# of Shareholders*, is shareholders the number of common shareholders; *# of Analysts*, is the number of analysts following the stock (from IBES); *Age,* is the difference between the split announcement year and the first year the firm is recorded in CRSP/Compustat Merged Database. I report differences in means (t- test) and medians (Wilcoxon test). ***, **, *: Significant at the 1%, 5%, and 10% level, respectively.

| Variables | Upper EAR Quartile (n=148) Mean (Median) | Lower EAR Quartile (n=148) Mean (Median) | Difference t / (Z) score |
|---|---|---|---|
| *EAR* | 5.2 (4.9) | 1.3 (1.5) | 35.56*** (14.87***) |
| *Post-EAR* | 2.7 (1.9) | 1.5 (1.2) | 5.01*** (6.90***) |
| Δ *EAR (%)* | -44.2 (-60.4) | 33.7 (0.0) | -6.12*** (-3.18***) |
| *Total Assets ($10^6$)* | 2,445.6 (537.7) | 4,038.6 (1,073.5) | -2.02** (-1.77*) |
| *Market Cap. ($10^6$)* | 5,829.3 (1,621.7) | 9,279.8 (2,551.8) | -1.71* (-1.95*) |
| *Total Sales ($10^6$)* | 2,382.7 (456.1) | 4,097.4 (871.4) | -2.06** (-2.15**) |
| *Price per share* | 83.3 (73.4) | 82.3 (74.0) | 0.20 (0.60) |
| *ROA (%)* | 3.6 (6.1) | 5.0 (8.2) | -0.84 (-1.92*) |
| *ROE (%)* | 10.3 (13.4) | 14.3 (14.3) | -1.20 (-1.47) |
| *Runup (%)* | 51.4 (35.3) | 48.2 (36.7) | 0.59 (0.13) |
| *BM* | 0.26 (0.22) | 0.25 (0.20) | 0.21 (-0.33) |
| *Split factor* | 1.1 (1.00) | 1.0 (1.00) | 2.40** (2.38**) |
| *# of Shareholders ($10^3$)* | 13.1 (1.2) | 17.3 (1.9) | -0.75 (1.67*) |
| *# of Analysts* | 9.7 (8.0) | 12.1 (10.0) | -2.43** (-2.18**) |
| *Age (years)* | 14.1 (9.0) | 14.7 (11.0) | -0.41 (-1.35) |

The univariate analysis indicates that firms in the Q1 quartile have significantly higher means and medians for both the post-EAR and ΔEAR. While the pre-split mean and median *Price per share*, *Runup*, *ROA, ROE*, and *BM* are similar between the Q1 and Q4 quartiles, the upper quartile stocks are generally smaller in terms of firm size measures (*Total assets*, *Market Capitalization, and Sales*) and larger in terms of *Split factor*. I use number of shareholders (*# of Shareholders*) and number of analysts (*# of Analysts*) as proxies for any potential differences in information asymmetry across sample firms. I find that firms with the highest level of EAR have fewer shareholders (although this difference is only marginally significant at the median and insignificant for the mean) and are followed by fewer analysts (both the mean and median are significant at the 5% level). These results seem to be in line with expectations, given that firms with a higher *EAR* have lower market capitalization and may not be closely monitored as larger firms with lower EAR.

### 2.6.3 Multivariate Analysis

#### 2.6.3.1 Split Announcement Returns and EAR

In this section, I empirically test my hypothesis that the EAR is related to the abnormal stock returns around the split announcement day. I use the following multivariate OLS regression model:

$$CAR_i = \alpha_0 + \beta_1 EAR_i + \beta_2 Splitfactor_i + \beta_3 lnPrice_i + \beta_4 lnSize_i + \beta_5 lnBM_i + \beta_6 Runup_i + \beta_7 Analyst_i + \beta_8 lnInst_i + \varepsilon_i \quad (2.3)$$

The dependent variable is the 5-day market-adjusted cumulative abnormal return for the splitting firm (*CAR* [-2, 2])[14] as in Ikenberry et al. (1996). *EAR* is the ratio of excess authorized

[14] My results are robust if I use CAR (-1, +1) in lieu of CAR (-2, +2) as the dependent variable.

shares to outstanding shares of the firm. I include control variables that have been employed in the literature to explain abnormal split announcement returns. For example, the split factor ($Splitfactor$) has been examined as a proxy for the strength of the signal by Brennan and Copeland (1988), Grinblatt, Masulis, and Titman (1984), and Lin et al. (2009). I also control for $lnPrice$, the log value of pre-split stock price. The book-to-market equity ratio *(lnBM)* and firm size (*lnSize*) have been examined by Ikenberry et al. (1996) while the pre-split price run-up ($Runup$) $is$ by Grinblatt, Masulis, and Titman (1984) as a cross-sectional determinant of abnormal split announcement returns. I also control for any cross-sectional variation in information with the number of analysts following the firm, $Analyst_i$. Finally, I control for institutional ownership ($lnInst$) which is the fraction of a firm's shares that are held by institutional investors (13f) in the calendar quarter before the split declaration from the Thomson Reuters Ownership Database. I estimate the standard errors using White's (1980) heteroscedasticity consistent covariance matrix.

Table 2.5 presents the results of estimating Equation 2.3. Models 1 and 2 only include the *EAR* and differ because Model 2 incorporates year dummies while Model 1 does not. In Model 3 and Model 4 I add all the control variables described above. And again, Model 4 has year dummies while Model 3 does not. The coefficients on *EAR* are positive and statistically significant in all four models. The *EAR* is statistically significant at the one-percent level by itself and at the five-percent level when all the control variables are included. I find that *Lnprice, lnsize* and $lnBM_i$ are all significant and negatively related to the split announcement return in all models, which is consistent with prior literature (Grinblatt et al.,1984; and Lin et al., 2009).

Table 2.5 Cross Sectional Analysis of Stock Splits and EAR

Table reports the coefficient estimates from ordinary least squares. In all models, the dependent variable is the market adjusted cumulative abnormal return (CAR) centered on the split announcement day, from day -2 to day +2. *EAR*, the ratio of non-outstanding authorized shares to outstanding shares of the splitting firm; *Splitfactor*, the number of additional shares per old share issued. *lnprice*, the log pre-split stock price at day -5 relative to the announcement date; *lnsize*, the log of the market value of the stocks outstanding shares at the end of the year prior to the announcement; *lnBM*, the log book-to-market equity ratio at the end of the year prior to the announcement and calculated as common equity divided by common shares outstanding multiplied by annual share price; *Runup* is the price run-up from day -120 to day -2 relative to the announcement date; *Analyst*, the number of analysts following the stock (from IBES); *Ln_inst*, the percentage of a firm's outstanding shares held by institutions in the quarter prior to the split announcement . P-values are reported in parentheses. ***, **, *: Significant at the 1%, 5%, and 10% level, respectively.

| Model | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| *EAR* | 0.0066***<br>(0.002) | 0.0063***<br>(0.003) | 0.0048**<br>(0.025) | 0.0048**<br>(0.026) |
| *Splitfactor* | --- | --- | 0.0297*<br>(0.052) | 0.0282*<br>(0.068) |
| *lnprice* | --- | --- | -0.0307***<br>(0.006) | -0.0356***<br>(0.002) |
| *lnsize* | --- | --- | -0.0080**<br>(0.044) | -0.0073*<br>(0.071) |
| *lnBM* | --- | --- | -0.0189***<br>(0.000) | -0.0165***<br>(0.001) |
| *Runup* | --- | --- | 0.0074<br>(0.450) | 0.0039<br>(0.705) |
| *Analyst* | --- | --- | 0.0003<br>(0.621) | 0.0002<br>(0.729) |
| *Ln_Inst* | --- | --- | -0.0012<br>(0.736) | -0.0011<br>(0.769) |
| *Constant* | 0.0200***<br>(0.005) | 0.0151<br>(0.224) | 0.1484***<br>(0.000) | 0.1616***<br>(0.000) |
| *Year Dummies* | No | Yes | No | Yes |
| *Adj. $R^2$ (%)* | 1.42 | 1.80 | 7.19 | 7.16 |
| *N* | 594 | 594 | 594 | 594 |
| *F-value* | 9.58 | 1.78 | 6.74 | 3.18 |
| *Pr > F* | 0.002 | 0.039 | 0.000 | 0.000 |

Overall, these findings suggest that firms with higher pre-split EARs have higher abnormal returns than those with lower EARs. This result is also consistent with my univariate findings and suggests that the market reacts more positively to the split announcement of firms with greater power to issue stock.

### 2.6.4 Robustness Tests

#### 2.6.4.1 Analysis of Firms That Increase Authorized Shares Prior to Split Pay Date

Approximately one-fourth of the firms in my sample reverse some or all of the reduction in excess authorized shares after the split is announced but before the new shares are distributed. This can be seen clearly in Table 2.2. The change in EAR variable is zero at the 75th percentile.

Table 2.6. Firms That Increase Authorized Shares Prior to Split Pay Date

Table reports the coefficient estimates from ordinary least squares. In all models, the dependent variable is the market adjusted cumulative abnormal return (CAR) centered on the split announcement day, from day -2 to day +2. *EAR,* the ratio of non-outstanding authorized shares to outstanding shares of the splitting firm*; E_dummy= 1* if the firm increase EAR after a stock split is announced and zero otherwise*; Splitfactor,* the number of additional shares per old share issued. *lnprice*, the log pre-split stock price at day -5 relative to the announcement date; *lnsize,* the log of the market value of the stocks outstanding shares at the end of the year prior to the announcement; *lnBM,* the log book-to-market equity ratio at the end of the year prior to the announcement and calculated as common equity divided by common shares outstanding multiplied by annual share price; *Runup* is the price run-up from day -120 to day -2 relative to the announcement date; *Analyst,* the number of analysts following the stock (from IBES); *Ln_inst,* the percentage of a firm's outstanding shares held by institutions in the quarter prior to the split announcement . P-values are reported in parentheses. ***, **, *: Significant at the 1%, 5%, and 10% level, respectively.

| Model | (1) | (2) |
|---|---|---|
| *EAR* | 0.0070** | 0.0073*** |
| | (0.011) | (0.009) |
| *E_dummy (1 if cheats 0 otherwise)* | 0.0153* | 0.0165* |
| | (0.086) | (0.074) |
| *Splitfactor* | 0.0249 | 0.0233 |
| | (0.252) | (0.281) |
| *Lnprice* | -0.0301** | -0.0351** |
| | (0.022) | (0.012) |
| *lnsize* | -0.0081* | -0.0075* |
| | (0.060) | (0.080) |
| *lnBM* | -0.0174*** | -0.0150** |
| | (0.002) | (0.010) |
| *Runup* | 0.0107 | 0.0066 |
| | (0.444) | (0.657) |
| *Analyst* | 0.0002 | 0.0001 |
| | (0.691) | (0.843) |
| *Ln_Inst* | -0.0010 | -0.0083 |
| | (0.812) | (0.842) |
| *Constant* | 0.1448*** | 0.1566*** |
| | (0.002) | (0.002) |
| *Year Dummies* | No | Yes |
| *Adj. $R^2$ (%)* | 8.30 | 8.61 |
| *N* | 594 | 594 |
| *F-value* | 5.85 | 2.97 |
| *Pr > F* | 0.000 | 0.000 |

I add a bivariate variable to my regression model to allow for this difference in the sample. The variable has a value of 1 if the firm does increase its authorized shares after the split announcement (i.e, if the firm "cheats") and is zero for those that do not increase their authorized shares after to the split announcement. Table 2.6 presents the results of this analysis. EAR and the other control variables maintain their signs and statistical significance from the original model presented in Table 2.5. The bivariate variable has a positive sign and is only significant in the both models 1 and 2 at the 10 percent level. This result appears to suggest that those firms that increase their authorized shares after the split do not have a higher abnormal announcement return and market is able to anticipate that they cheat.

#### 2.6.4.2 Analysis of Agency Costs and Excess Ratio

As I argue that there exists a relation between excess ratio and agency costs I attempt to capture that following measures used in the prior literature[15]. As a measure of agency cost, I use three measures. First, a firm`s selling, general, and administrative (SG&A) expense which represents the costs related to the management function and to the sale of products, includes managerial salaries, rents, insurance, utilities, supplies, and advertising costs. Higher levels of SG&A expenses are a close approximation of managerial pay and perquisite consumption in terms of higher salaries, large office complexes, and other organizational support facilities. These costs reflect managerial discretionary expenses and may be a good proxy for agency costs. Second, I measure agency cost as the ratio of annual sales to total assets (i.e. asset utilization). This ratio measures management`s. ability to utilize assets efficiently. A high asset turnover ratio shows a large amount of sales and ultimately cash flow that are generated for a given level of assets. On the contrary, a low ratio would indicate that management is using assets in non-cash flow

[15] For example see Ang, Cole, and Lin (2000), Anderson and Reeb (2003), and Singh and Davidson (2003).

generating and probably value destroying ventures. While a higher asset turnover may be identified with efficient asset management practices and hence shareholders value creation, a lower sales to asset ratio reflects asset deployment for unproductive purposes. Therefore firms with considerable agency conflict (i.e. with higher *EAR*) will have lower asset turnover ratios relative to those having less agency conflict. Third, I examine the ratio of firm cash holdings to total assets. It is possible that management can invest cash for value destroying project (Jensen, 1986). I also check these difference between Upper and Lower EAR quartiles have changed in the year following the split.

**2.6.4.2.1 Agency Costs and Excess Ratio – Univariate Analysis**

In Table 2.7, I report univariate mean comparison test results of the sample firm subgroups categorized on the basis of upper and lower *EAR* quartiles. Panel A presents the results for before the split sample. The Panel A of Table 2.7 shows that firms within the Upper *EAR* quartile are less efficient in their asset utilization and have higher managerial discretionary expenditures relative to firms with lower *EAR* quartile. Firms within higher *EAR* quartile have asset turnovers of 1.03 and those with lower *EAR* have *asset turnover* of 1.12. These differences are statistically insignificant but in the hypothesized direction. Panel B shows the asset turnover results for after split period. For this period the difference for the asset turnovers remain between the two *EAR* quartiles, but the difference is insignificant in despite having the predicted nominal direction. Second row in Panel A, show the *SG&A expense* averages for firms with higher and lower *EAR* quartile. The means for these groups are significantly different when we use both parametric and non-parametric tests, and the difference is in the predicted direction. Firms with higher (lower) EAR quartile have a mean *SG&A expense ratio* of 0.38 (0.31). Thus, lower EAR firms have smaller SG&A expenses. Panel B shows the *SG&A Expense* for after split period. For this period the difference for the expense ratios is still significant and have the predicted nominal direction. Third row of Table 2.7 compare the Cash/TA ratios for firms with upper quartile EAR to lower quartile

EAR. The Cash/TA ratio for the upper quartile sample (0.19) is nominally larger than lower quartile (0.15). This difference is consistent with our expectation and is significant at 10 percent level. In Panel B, I see that the difference is no longer significant and supports the hypothesis that decline in EAR decreases agency problems.

Although this is not the main focus of my analysis, I also examine the EAR quartiles in terms of Governance Index (Gompers, Ishii, Metrick, 2003) for before the split period since this variable is not available for all firms and all years. I find that there is statistical difference between upper EAR quartile and lower EAR quartile medians of Governance Index (*G-Index*) although the difference in means is insignificant. The difference between the medians is against the predicted nominal direction.

Overall, univariate results provide some evidence that higher EAR seems to result disorder of interests of the shareholders and the management. The relation between agency cost and EAR variable is stronger for the *SG&A expense ratio* than *Asset Turnover*. In the next section I add control variables to the analysis.

**2.6.4.2.2 Agency Costs and Excess Ratio – Multivariate Analysis**

I relate EAR to agency cost measures in a multivariate analysis that permits controlling for other variables. It also allows me to investigate how effective is the decline in EAR in enhancing asset utilization efficiency and in controlling managerial discretionary expenses. In Table 2.8 I present the results of multivariate regression analysis relating *SG&A expense ratio* and *Asset turnover* to *EAR*.

Table 2.7 Comparison of Agency Costs for Higher and Lower EAR Quartile Firms

Table presents the mean (median) univariate agency proxy characteristics for splitting firms. Quartile rankings are based on the EAR. *Asset turnover* is measured as ratio of annual sales to total assets. *SG&A expense ratio* is measured as the ratio of SG&A expense to total sales revenue. *CASH /TA* calculated as cash is divided by total assets at the end of the year prior to the announcement. *G-Index* is the governance index used by Gompers Ishii, and Metrick (2003). I report differences in means (t- test) and medians (Wilcoxon test). ***, **, *: Significant at the 1%, 5%, and 10% level, respectively.

| Variables | Upper EAR Quartile Mean (Median) | N | Lower EAR Quartile Mean (Median) | N | Difference t / (Z) score |
|---|---|---|---|---|---|
| *Panel A. Before the Split* | | | | | |
| *Asset turnover* | 1.03 (0.81) | 148 | 1.12 (0.92) | 148 | -1.02 (1.23) |
| *SG&A expense ratio* | 0.38 (0.28) | 148 | 0.31 (0.23) | 148 | 1.77* (1.70*) |
| *CASH/TA* | 0.19 (0.14) | 148 | 0.15 (0.09) | 148 | 1.81* (1.89*) |
| *G-Index* | 7.82 (7.00) | 100 | 8.01 (8.00) | 113 | -1.25 (-2.26**) |
| *Panel B. After the Split* | | | | | |
| *Asset turnover* | 1.00 (0.76) | 144 | 1.04 (0.84) | 142 | -0.46 (0.90) |
| *SG&A expense ratio* | 0.37 (0.28) | 133 | 0.28 (0.23) | 135 | 2.57** (2.43**) |
| *CASH/TA* | 0.15 (0.11) | 133 | 0.14 (0.09) | 135 | 1.02 (-1.43) |

My first proxy measure of agency cost is in terms of managerial discretionary expenses as measured by SG&A expenses to sales ratio. I expect a significantly positive relation between EAR and SG&A expense ratio. In Table 2.8 I present the results of my analysis relating SG&A expense to EAR, controlling for other firm specific *CASH/TA* and *lnBM*, and *lnsize*. In model 2 I control for the year effects. I find that *EAR* has a statistically significant coefficient in both models. *lnBM* has a negative and significant coefficient in all models suggesting that higher book to market firms have relatively smaller *SG&A expense ratio*. On the other hand, *CASH/TA* ratio is positive and significant in both models and suggest that that firms that hold higher cash have higher SG&A ratios in line with the agency cost theory (Jensen, 1986). *Lnsize* is positive and significant in all

models and suggests that larger firms are likely to have higher *SG&A expense ratios.* These results lend support to my hypothesis that larger EAR misaligns the interests of shareholders and management and appears to higher agency costs. In model 3, I add *E_dum* to the model to see if the cheaters have higher *SG&A Expense ratio*. I find that the ratio of the dummy is positive and significant. This result suggests that cheating and increasing EAR leads to higher expenses and hence agency costs.

My second analysis in where the dependent variable in Table 2.8 is the *Asset turnover* ratio. In both models 4 and 5 the coefficients for *EAR* is positive yet insignificant. Thus, these results support our univariate findings suggesting that firms with greater EAR do not have significantly better asset utilization ratios. The coefficients for the control variables for *Lnsize* and *CASH/TA* are both negative and are significantly related to the *Asset turnover* ratio. Thus, the results indicate that larger firms are less efficient in their asset utilization and that higher cash holding adversely affects firm efficiency. The coefficients for the control variable for *lnBM* is negative and insignificant. Thus *lnBM* composition does not appear to be related to *Asset turnover*. In model 6, I add *E_dum* to the model to see if the cheaters have worse *Asset turnover*. I find that the ratio of the dummy is negative and significant. This result suggests that cheating and increasing EAR leads to higher agency costs.

Overall, my multivariate analysis relating *EAR* and agency costs measured in terms of expense ratio suggest, that, even after controlling for other factors, *EAR* significantly explains the expense ratio variations across my splitting sample firms. More specifically, consistent with the agency hypothesis, higher *EAR* seems to worse align management and shareholders' interests and is positively related with a higher level of discretionary expenses reflecting higher agency costs.

Table 2.8 Multivariate Analysis of Agency Costs and EAR

The dependent variables proxying for agency costs are *Asset turnover* is measured as ratio of annual sales to total assets. *SG&A expense ratio* is measured as the ratio of SG&A expense to total sales revenue. The independent variables are: *EAR*, the ratio of non-outstanding authorized shares to outstanding shares of the splitting firm; *CASH /TA* calculated as cash is divided by total assets at the end of the year prior to the announcement, *lnsize*, the log of the market value of the stocks outstanding shares at the end of the year prior to the announcement; *lnBM*, the log book-to-market equity ratio at the end of the year prior to the announcement and calculated as common equity divided by common shares outstanding multiplied by annual share price. To control year effects we add year dummies. ***, **, and * denote levels that are significantly different from zero at the 1 percent, 5 percent, and 10 percent, respectively.

| | *SG&A Expense Ratio* | | | *Asset Turnover* | | |
|---|---|---|---|---|---|---|
| Model | (1) | (2) | (3) | (4) | (5) | (6) |
| *EAR* | 0.0143**<br>(0.024) | 0.0136**<br>(0.022) | 0.0251***<br>(0.000) | 0.0059<br>(0.778) | 0.0074<br>(0.719) | -0.0277<br>(0.208) |
| *E_dum* | ------ | ------ | 0.1107***<br>(0.000) | ------ | ------ | -0.3379***<br>(0.000) |
| *CASH/TA* | 0.4837***<br>(0.000) | 0.3498***<br>(0.000) | 0.3139***<br>(0.000) | -0.9495***<br>(0.000) | -0.7460***<br>(0.000) | -0.6398***<br>(0.002) |
| *lnBM* | -0.0615***<br>(0.000) | -0.0439*<br>(0.000) | -0.0431***<br>(0.000) | -0.0102<br>(0.769) | -0.0114<br>(0.755) | -0.0144<br>(0.688) |
| *Lnsize* | 0.0228***<br>(0.000) | 0.0153**<br>(0.017) | 0.0149**<br>(0.017) | -0.0591***<br>(0.008) | -0.0441**<br>(0.049) | -0.0436**<br>(0.049) |
| *Intercept* | 0.4049***<br>(0.000) | 0.3855***<br>(0.000) | 0.3136***<br>(0.000) | 1.6030***<br>(0.000) | 1.6452***<br>(0.000) | 1.8769***<br>(0.000) |
| *Year Dummies?* | No | Yes | Yes | No | Yes | Yes |
| *Adj. $R^2$ (%)* | 22.26 | 30.05 | 33.11 | 4.84 | 7.76 | 10.60 |
| *N* | 594 | 594 | 594 | 594 | 594 | 594 |

## 2.7. Conclusion

Jensen (1986) claims that if left unmonitored, entrenched managers may waste free cash flows. I explore this conjecture as it pertains to non-outstanding authorized shares and provide empirical evidence by examining the effect of the reduction in excess authorized shares as the result of a stock split. I find that the abnormal stock split announcement returns are positively correlated with the amount of pre-split excess authorized shares. This appears to indicate that the market interprets the split announcement and concomitant reduction in excess authorized shares as a more positive signal for firms with greater pre-split excess authorized shares. In addition, multivariate cross-sectional analyses reveal that the abnormal returns for splitting firms are positively related to the

excess authorized ratio. I also examine the relation between EAR and agency cost proxy variables: asset turnover and expense ratio. I find that higher EAR misaligns managerial and shareholders` interests and increases the agency costs when I define agency costs in terms of discretionary expenses. Nevertheless, the relation is generally insignificant when I define agency costs as asset turnover. Overall, based on my findings I conclude that managers' power to issue stock becomes more constrained as a result of the split, reducing agency costs, and hence increasing firm value.

# Chapter 3

# Top-up Options and Tender Offers

## 3.1 Introduction

On August 1, 2013 Section 251(h) of the Delaware General Corporation Law became effective. For all practical purposes, this ended the use of top-up options in two-step transactions, such as tender offers.[16] However, prior to this new law, top-up options, which allowed for relatively fast execution of a merger without the necessity of shareholder approval, were widely used. In the business press, the use of top-up options has been advanced as an explanation for the increase in the use of tender offers over the last decade. According to Factset Mergermetrics, tender offers were used in about 23 percent of friendly public deals in 2010. This compares with only 7.6 percent of such deals in 2006.[17] It's likely that the 2006 Best Price Rule (SEC Rule 14d-10), which reduced litigation risk associated with the use of top-up options, is a major factor in the increased prevalence of top-up options (Offenberg and Pirinsky, 2013). The use of top-up options, however has not been without its critics. Opposition to the use of top-up options and the associated termination of shareholder approval and speedy completion of the deal has focused on the lack of shareholder oversight, absence of proxy advisory opinions, and the anti-competitive nature of this type of tender offer. However, not all commentators subscribe to the view that the use of top-up options (i.e., speedy deal completion) is negative for the shareholders of the target firm. For example, quick resolution may avoid the enactment of a "material adverse change," or "MAC," clause. In their paper that compares mergers with tender offers, Offenberg and Pirinsky (2013) suggest that fast execution of a merger is useful for a bidder when the target is strategically

[16] See for example "The Death of the Top-Up Option in Two-Step Transactions" (http://clsbluesky.law.columbia.edu/2013/10/17/death-of-the-top-up-option-in-two-step-transactions/).
[17] http://dealbook.nytimes.com/2010/10/14/behind-the-growing-number-of-tender-offers/?_r=0

important or there is a high probability that a competing bid may arrive. To the best of my knowledge, no research has investigated the effects of top-up options on target and bidder shareholders. Nor is there any research that investigates the determinants for the use of top-up options in tender offers. It is exactly this gap in the literature that I attempt to fill with my paper.[18] Although top-up options are no longer used in tender offers, studying their use in tender offers is important as the findings of my paper extend to the manner in which tender offers are currently being utilized. The changes that became effective in August 2013 essentially allowed for quick resolution of the tender offer without the need of a top-up option to circumvent target shareholder approval. Thus, any potential negative effects to shareholders which may have been associated with the use of top-options prior to August 2013, are likely to be exacerbated after that date, calling into doubt the sensibility of the rule change.

In this study, I test three hypotheses that may explain the use of top-up options. I test these hypotheses using the stock price effects on the announcement date of the tender offer. The effects of a top-up option can be negative to the target shareholders if they prevent competitive bidding ("anti-competitive hypothesis"), positive if they enhance the bargaining power of the target ("increased bargaining hypothesis"), or more neutral if top-up options are a mechanism to an efficient merger resolution ("efficient merger resolution hypothesis"). My sample spans 2000 to 2012 and consists of 206 tender offers that include top-up options and 250 tender offers without top-up options. I find evidence that tender offers with top-up options leave target shareholders relatively worse off. Specifically, the average abnormal returns to target shareholders during the period spanning 42 days prior to the announcement until the effective date (ex-date) are 50% for

[18] To our knowledge, Ganor (2011), in her law treatise on authorized shares, is the only paper that discusses top-up options in some detail.

tender offers that include top-up options and about 57% for tender offers that do not have a top-up feature. Clearly, this evidence is most consistent with the "anti-competitive hypothesis". An investigation of bidder abnormal returns shows that tender offers with a top-up option lead to substantially lower returns over the same period as well. Bids that include a top-up option lead to bidder abnormal returns of about 2%, whereas bids without a top-up option generate abnormal returns of about 9%. Closer inspection of my results reveals that these results are driven by top-up options used in the period prior to 2007. After 2006, when the use of top-up options became widespread, I find no statistically significant differences in bidder and target returns for tender offers with top-up options versus those without. These results are robust and remain intact when I control for a host of variables that previous literature suggests are related to abnormal returns surrounding M&A activity. These findings suggest that top up options associated with tender offers may have been wealth destroying prior to 2007, but when most tender offers started to include top up options, a separating equilibrium ceased to exist.

In the second step of my analysis, I attempt to uncover the determinants for the use of top-up options. I relate the use of top-up options in tender offers to a host of potential determinants and find very different results, depending on the time period. In the pre-2007 period, I find that only the use of lock-up options is (positively) related to the use of top-up options. In the later period, when lock-up options are no longer used in the tender offers that I study, I find that toeholds are negatively related to the use of top-up options. This suggests that toeholds may have taken the place of lock-up options. These results support the anti-competitive hypothesis since both lock-up options and toeholds deter a competitive bid.

I further analyze the relation between top-up options, lock-up options, toeholds, and termination fees, as these tender offer features may all be part of a particular bargaining strategy

and the literature documents relations between toeholds and lock-up options (Ravid and Spiegel 1999; Burch 2001), toeholds and termination fees (Bates and Lemmon, 2003; Betton, Eckbo, and Thorburn, 2009). I find that during the entire sample period, there is only significant correlation between toeholds and top-up options. When I spilt the full sample into two periods, I find that during the pre-2007 period, lock-up options are positively correlated with the use of top-up options. Moreover, top-up option inclusion in tender offers is also (somewhat weaker) negatively related to termination fees. This suggests that tender offers during this period which include a top-up option are indeed deemed to be friendly in nature. I also find that target management is not only granting a top-up option and a lock-up option, it also requires lower termination fees. Moreover, I find that toeholds take the place of lock-up options in post-2006 period.

Given that most of my findings appear to support the "anti-competitive hypothesis", I further investigate why target management is willing to accept bids that seem to be sub-optimal for their shareholders. I first investigate whether top-up options are agreed upon by management of firms with relatively weak governance. I find no statistical difference between tender offers that include top-up options or not in terms of Governance Index (Gompers, Ishii, Metrick, 2003). I also empirically examine a variety of CEO and Board characteristics on the inclusion of a top-up option in tender offers and wealth effects. I hand collect the data for CEO and board characteristics from SEC Edgar database. I find that 38% of targets with top-up option are of Chairman CEOs and this is significantly less than non-top-up option offers which have 54%. Further I find that top-up option targets are associated with less CEO ownership and higher staggered boards especially in pre-2007 period. This is in line with the findings of Bebchuk and Cohen (2005) that staggered boards protect incumbents from a hostile takeover and supports the prior literature that staggered boards destroy firm value (Daines, 2005; Faleye, 2007; and Ganor 2007). First, in a multivariate

setting I examine the wealth effects controlling for CEO and Board characteristics. I find that the coefficient on *Top-up dummy* is significantly different from zero (p=0.027). Among the CEO and Board characteristics I only find that CEO Tenure is positive and significant (p=0.028). The main result of this analysis is that the presence of a top-up option lowers target returns by about 13% during the period spanning 42 days prior to the announcement until the ex-date. Second, I examine the determinants of the use of top-up options by controlling CEO and board characteristics estimating a logistic regression where the dependent variable is equal to 1 when the top-up option in included and zero otherwise. I find that only the *CEO Age* is negative and statistically significant for the pre-2007 period. This suggests that the younger CEOs are more likely to grant top-up options. I follow this by analyzing the career paths of target management after the tender offer is completed. In spirit similar to Hartzell, Ofek and Yermack (2004) I attempt to determine whether target management was willing to take sub-optimal deals as a result of a quid-pro-quo deal. I do not find any statistically significant difference for CEOs with top-up options compared to the ones without. However, I find that CEOs of targets that issue top-up options are more likely to have golden parachutes. These golden parachutes provide compensation for the loss of future income streams associated with their jobs for these CEOs.

This chapter aims to contribute to the literature in a number of ways. First, and most important, a vast literature exists that investigates the mechanisms that allow assets to be allocated to their most productive use. M&A activity is one mechanism through which this allocation may be adjusted. Yet, much is still unknown about the actual bargaining process leading up to reallocation of assets through M&A. Prior literature has investigated differences between mergers and acquisitions (Schwert, 1996; Officer, 2003; Moeller, Schlingemann, and Stulz, 2004; Betton,

Eckbo, and Thorburn, 2008, and Fu, Lin, and Officer, 2013), the use of lock up options[19] (Burch 2001), the use of termination fees (Bates and Lemmon, 2003; Officer, 2003; Boone and Mulherin, 2007), toeholds (Walkling and Edmister, 1985; Eckbo and Langohr, 1989; Jarrell and Poulsen, 1989; Jennings and Mazzeo, 1993; Ravid and Spiegel, 1999; Betton and Eckbo, 2000; Betton, Eckbo, and Thorburn, 2009), and M&A bargaining processes (Boone and Mulherin 2007). I add to this literature by empirically investigating the use of top-up options, which I document to have substantial negative effects on target and bidder wealth. This is important because recent regulatory changes have made it easier for tender offers to be executed as if they have top-up options (i.e., relatively fast without target shareholder approval). I provide evidence suggesting that this may not be optimal for bidder and target shareholders. A second contribution of this chapter is that I examine the interplay of tender offer features such as toeholds, termination fees, lock-up options, and top-up options. Most prior literature tends to investigate these features without considering the potential that these features may be substitutes or complements of each other. The third contribution of this chapter is that I provide evidence that is consistent with the idea that managers are opportunistic. A large literature (Chalmers, Dann, Harford, 2002; Hartzell, Ofek, and Yermack, 2004; Haslem, 2005; Fich, Jie, and Tran, 2011; Heitzman, 2011) finds that managers are willing to sacrifice shareholder wealth in exchange for their personal enrichment. My findings of greater number of golden parachutes for target CEOs that grant top-up options are consistent with this notion.

[19] Lock up options are different from top-up options because a lock up option gives a selected/friendly bidder the right to purchase a portion of a target`s shares at a discount of the price any competing bidder must pay. However a top-up option gives a bidder the right, upon the completion of a tender offer that reaches the minimum tender condition level, to purchase newly issued shares of the target. Also, a lock-up option can be used in all sorts of mergers while top-up options are only used in tender offers.

In the next section (Section 3.2) of this chapter I describe how top-up options work and provide a hypothetical example. The following Section 3.3 briefly describe the regulatory environment. Section 3.4 contains sample selection procedure and also describe the sample. I report empirical results in Section 3.5. Section 3.6 contains additional analyses regarding the relation among top up options, lock-up options, toeholds, and termination fees. Section 3.7 presents robustness checks such as completed deals, public bidder, two stage least square analysis, and duration analysis. Section 3.8 controls for a variety of CEO and Board characteristics. Finally, Section 3.9 summarizes and concludes the chapter.

### 3.2 The Mechanics of Top-up Options

A top-up option gives a bidder the right, upon the completion of a tender offer that reaches the minimum tender condition level, to purchase newly issued shares of the target so as to increase the buyer's common stock ownership interest to the 90 percent level required to effect a "short form" merger. If the tender offer is successful and the bidder acquires at least a majority of the shares, the top-up option allows the bidder to proceed with the takeover of the company. The successful bidder buys newly issued shares directly from the company and combined with the shares tendered in the tender offer the bidder will have 90 percent of the issued and outstanding shares of the target. This allows the bidder to buy out the non-tendering shareholders using a freeze-out short form merger. Importantly, a short form merger does not require a meeting or a vote of the shareholders and leaves the shareholders with appraisal rights as their sole recourse. Although the top-up shares are issued at the tender offer price, the buyer typically pays for those shares with a note which is cancelled when the buyer consolidates with the target.[20]

[20] Appendix 3 contains an excerpt from Burger King's SC TO-T filing dated September 16, 2010 that presents a typical example of a top-up option explanation in a tender offer.

To illustrate the use of a top-up option, consider the following example. Suppose the target has 1,000 shares issued and outstanding prior to the tender offer. Now, assume that the bidder was able to acquire 500 shares in the tender offer, representing 50 percent of the total issued and outstanding shares of the target. Following the exercise of a top-up option the target will issue new shares to the bidder who, as a result will own at least 90% of all outstanding shares, at that time. To do so, the target company has to issue 4,000 new shares to the bidder. These additional shares will increase the total number of issued and outstanding shares from 1,000 to 5,000 shares. Then, following the exercise of the top-up option the bidder owns 4,500 shares (500 shares that were originally tendered and the additional 4,000 shares that the company issued directly to the bidder as a result of the exercise of the top-up option). These 4,500 shares (or 90%) allow the bidder to perform a short form merger.

There is a constraint on the use of a top-up option. The amount of shares issued when a buyer exercises the top-up option is limited by the number of authorized and unissued shares of the target. The target firm must have sufficient authorized shares available so it can use those when it issues the additional shares to the bidder. If there are insufficient authorized shares, shareholder approval is required to increase the level of authorized shares. Obviously, this reduces the benefit of using the top-up option substantially.

### 3.3 Regulatory Environment

As noted by Andrade, Mitchell, and Stafford (2001) and others (e.g., Offenberg and Pirinsky, 2013), the number of hostile tender offers decreased dramatically in the 1990s as a result of the adoption of state antitakeover laws. However, tender offers continued to be used all throughout the 1990s and later. Two major regulatory events have since affected the way tender offers are executed.

First, on December 8, 2006 the SEC amended its Best Price Rule (SEC Rule 14d-10).[21] This amendment made tender offers about as friendly as mergers and reduced the legal uncertainty (i.e., litigation risk) regarding the executive compensation payment activated by the tender offer by allowing them to be excluded from the definition of consideration.[22]

A second major regulatory change affecting the use of top-up options with tender offers occurred on August 1, 2013 when the state of Delaware amended its Delaware General Corporation Law (DGCL). Specifically, lawmakers added Section 251(h) of the DGCL, which basically eliminated the need for stockholder approval of back-end mergers following certain tender offers in two-step public company merger transactions. Prior to Section 251 (h) in a two-step merger, a bidder first made a tender offer to acquire target company's shares. Following the consummation of the offer the bidder conducted a back-end merger to acquire all of the target`s shares that were not tendered. Historically, under Delaware law, if at least 90% of the shares of each class of the target`s shares capital stock that would otherwise be entitled to vote on the back-end merger were owned by the buyer immediately following the consummation of the tender offer, the back-end merger could be consummated immediately, without a stockholder vote. This allowed the use of short-form merger provisions of the DGCL. However, if less than 90% of the shares of each class of the target's shares owned by the buyer immediately following the tender offer, it was necessary to obtain formal stockholder approval of the back-end merger, which would usually involve filing preliminary and definitive proxy statements with the SEC and holding a special meeting of stockholders to vote. Top-up options granted by target managers to bidders in tender offers enabled bidders to bypass target shareholder consent and allowed for relatively fast

[21] The SEC instituted rule 1986 to avoid blockholders selling their shares for a higher price than other investors. See http://www.law.cornell.edu/cfr/text/17/240.14d-10

[22] For a more detailed discussion of the Best Price Rule see Offenberg and Pirinsky (2013).

execution of the tender offer and two-step merger as explained in Section I. Section 251(h) addressed the issues with public company two-step merger transactions and top-up options and provided that, unless expressly required by the target company's certificate of incorporation, no vote of the target company's stockholders would be necessary to effect a merger if the merger agreement relating to the merger was entered into starting August 1, 2013. This basically eliminated the need for a top-up option for tender offers for two-step mergers.[23]

Prior to the changes in Delaware law in 2013, court decisions had also showed that litigation risk in tender offers that included a top-up clause was low. For instance, when Bristol-Myers Squibb Company tried to acquire ZymoGenetics opposing shareholders listed the top-up option as a tool to "…*circumvent the requirement of a shareholder vote*." Yet, after the filing of the complaint both sides reached a settlement agreement in which the management of ZymoGenetics agreed to disclose information of the transaction bonus that the CEO, who also served as a director, would receive upon the closing of the sale. In addition, the company agreed to pay plaintiffs' counsel $625,000 for attorneys' fees and expenses incurred in association with the case. This case indicates that successfully challenging the management decision to grant a top-up option is not an easy task, yet it can be costly for the company. Similarly, shareholders sued the tender offer by 3M Corporation to acquire share of Cogent Inc. which included a top-up option clause.[24] They argued that the CEO of Cogent had convinced the board to grant a top-up option to 3M for his personal economic interests (and also have a controlling position) even though another bidder had offered more for the shares of Cogent. The Court denied the shareholders and allowed

[23] For more detailed discussion see; http://www.dorsey.com/eu_csl_delaware_public_comp_merger_transactions/
[24]http://www.shearman.com/files/Publication/d6caae48-dc5c-4fec-a544-9a178ee47973/Presentation/PublicationAttachment/1d72f781-464d-48c6-a891-9c91d7b1b9d5/MA-112410-Delaware-Chancery-Court-Provides-Guidance-for-Use-of-Top-Up-Options.pdf

3M to continue with the tender offer and acquire Cogent. Following this decision of the Delaware Court the impression in the market was that litigation risk for top-up was almost eliminated.[25]

### 3.4 Data and Sample Construction

In Table 3.1 I describe the sample selection procedure in detail. From the Securities Data Corporation (SDC) *Mergers and Acquisitions* database I collect all completed and failed tender offer deals announced between January 1, 2000, and December 31, 2012, that involve publicly traded U.S. target firms. I find a total of 2,429 tender offers. I delete 683 duplicate deals (i.e., deals with the same bidder, target, announcement date, and transaction value). I also require that the bidder be based in the U.S., this removes 238 deals. Seven hundred and eighty-one offers are excluded because they are self-tender offers and never include top-up options. My next screens eliminate deals with a transaction value less than $10 million (90 tender offers) and deals in which the bidder owns over 50% of the target prior to the tender offer (67 offers). I also require that CRSP and Compustat data is available for the target. This requirement eliminates an additional 112 observations. Finally, I exlude that all firms in my sample, targets and acquirers, that are not listed on the NYSE, NASDAQ, or AMEX and have a share code of 10 or 11 (2 offers). My final sample consists of 456 tender offers. My sample is comparable in size to similar studies such as Hartzell et al. (2004) with 235 firms, Boone and Mulherin (2007) with 400 observations, and Bargeron (2012) who studies 802 offers.

[25] Steven M. Davidoff (10.14.2010) Behind the Growing Number of Tender Offers http://dealbook.nytimes.com/2010/10/14/behind-the-growing-number-of-tender-offers/

Table 3.1. Sample Selection

This Table describes the sample selection criteria. The sample includes tender offers (from SDC), between January 2000 and December 2012.

| Selection Criteria | | Observations |
|---|---|---|
| All tender offers for U.S. targets between 2000-2012 | | 2,429 |
| Duplicate observations | 683 | |
| Foreign Bidders | 238 | |
| Self-tender Offers | 781 | |
| Size < $10 million. | 90 | |
| Bidder owns > 50% of Target | 67 | |
| No CRSP or Compustat data | 112 | |
| Share Code other than 10 or 11 or non NYSE, Nasdaq, or AMEX | 2 | |
| Minus | 1,973 | |
| Final Sample | | 456 |

Table 3.2 presents the temporal distribution of the 456 sample tender offers, by year. I bifurcate the sample, based on whether a top-up option was included in the deal, or not. Overall, I find that, during my sample period, 206 tender offers included a top-up option and 250 tender offers do not. To determine whether a top-up option was included in the tender offer I read the tender offer statements (Form SC TO-T - *Tender offer statement by Third Party*) that are filed with the Securities and Exchange Commission (SEC) when a tender offer is announced and are available in the SEC's EDGAR database. In most of these filings I find statements similar to the following one made by Blue Acquisition Holding Corporation in their Form SC TO-T dated September 16, 2010[26];

*"that if Parent and Purchaser will not collectively own at least 90% of the Shares immediately after the completion of the Offer and, therefore, the exercise of the Top-*

[26] http://www.sec.gov/Archives/edgar/data/1352801/000095012310086742/0000950123-10-086742-index.htm

*Up (as defined below) is necessary to ensure that Parent and Purchaser collectively own at least 90% of the Shares immediately after the completion of the Offer, there shall not exist under applicable law or other legal restraint any restriction or legal impediment on Purchaser's ability and right to exercise the Top-Up, and the Shares issuable upon exercise of the Top-Up, together with any Shares held by Parent and Purchaser (including Shares validly tendered in the Offer), constitute at least 90% of the outstanding Shares"*

Table 3.2. Sample Distribution

This Table presents my sample tender offers (from SDC), by year and whether they include top-up options or not. The table also presents whether a top-up option is exercised.

| | Top-up option | | | | No Top-up option | |
|---|---|---|---|---|---|---|
| Year | Observations | % | Exercised | % Exercised | Observations | % |
| 2000 | 4 | 4.5% | 0 | 0.00% | 85 | 95.5% |
| 2001 | 10 | 17.5% | 4 | 40.00% | 47 | 82.5% |
| 2002 | 4 | 14.3% | 1 | 25.00% | 24 | 85.7% |
| 2003 | 9 | 25.7% | 2 | 22.22% | 26 | 74.3% |
| 2004 | 6 | 40.0% | 0 | 0.00% | 9 | 60.0% |
| 2005 | 5 | 35.7% | 1 | 20.00% | 9 | 64.3% |
| 2006 | 3 | 33.3% | 1 | 33.33% | 6 | 66.7% |
| 2007 | 15 | 65.2% | 5 | 33.33% | 8 | 34.8% |
| 2008 | 27 | 93.1% | 11 | 40.74% | 2 | 6.9% |
| 2009 | 31 | 72.1% | 16 | 51.61% | 12 | 27.9% |
| 2010 | 35 | 81.4% | 19 | 54.29% | 8 | 18.6% |
| 2011 | 27 | 71.1% | 20 | 74.07% | 11 | 28.9% |
| 2012 | 30 | 90.9% | 21 | 70.00% | 3 | 9.1% |
| Total | 206 | 45.2% | 101 | 49.03% | 250 | 54.8% |

In the early part of the sample period the use of top-up options was a relatively uncommon practice. For example, in 2000 only 4.5% of all tender offers included top-up options. However, by 2012 top-up options were included in more than 90% of all tender offers. I also report the percentage of Top-up options that were exercised by acquirers. I find that 101 (or about 49%) all

top-up options are exercised.[27] I find a noticeable increase over time. While in 2006 only 20% of these options were exercised this percentage increased to over 70% in the last two sample years. Hence, both due to the to the marked increase in the use of top-up options and the increase in their exercise during the later part of my sample period, not only do I perform analyses over the full sample, but also over two subsamples; Pre-2007 (2000-2006) and Post-2006 (2007-2012).

## 3.5 Empirical Results

### 3.5.1 Wealth Effects-Univariate Analysis

Table 3.3 shows abnormal returns to the bidder and target firms, for three different windows. I calculate market-adjusted cumulative abnormal returns, using the value weighted index (incl. dividends, from CRSP) as a proxy for market returns. Panel A shows that in the three days surrounding the tender offer announcement (-1, +1, where 0 is the announcement date) target CARs are somewhat higher (though not statistically different) when a top-up option is included. The mean (median) three day CAR is 41% (32%) when a top-up option is included, whereas it is 38% (31%) if no top-up option is included. This is not very surprising given that at the initial announcement it is not mentioned whether a tender offer include a top-up option or not. When I investigate longer windows that are designed to capture all the price effects from 20 (or 42) days prior to the announcement until the effective date (x-date) of the bid[28], I find that target CARs tend to be significantly lower for tender offers that include top-up options. Economically, these differences appear to be meaningful. For example, the means return for tender offers with and

[27] To determine whether a Top-up option is exercised we read the final and amended SC TO-T of the acquired firm from SEC Edgar.

[28] Schwert (1996), Bargeron, Schlingemann, Stulz, and Zutter (2008), and Fu, Lin, and Officer (2013) suggest that in order to capture all wealth effects that may be associated with M&A activity it may be preferential to use a longer time interval, including a substantial period prior to the bid announcement to capture run up effects. Therefore, in the remainder of the chapter, I focus our discussions mainly on the (-42, x-date) abnormal return window.

without top-up options are 50% and 57%, respectively. Based on these findings, I conclude that there is little to no support for the increased bargaining hypothesis and the efficient merger resolution hypothesis. Both hypotheses predict relatively higher (or at least not lower) target CARs when a top-up option is included. The results in Panel A are most consistent with the anti-competitive hypothesis. When I partition the sample temporally (pre-2007 and post-2006), important differences appear. Panels A1 and A2 clearly show that all the effects that were captured in Panel A are driven by tender offers with top-up options in the pre-2007 period. All three of my hypotheses suggest that the use of top-up options should benefit (or at least not be harm) bidder shareholders, rendering any tests uninformative. However, for completeness I report them in Panel B.[29] I calculate these market-adjusted CARs using the value-weighted market return from CRSP. Interestingly, I find that the longer window CARs are significantly lower for tender offers that include a top-up option. To be specific, the (-42, x-date) bidder has an average (median) CAR of 2.0% (1.4%) for offers with a top-up option, whereas it is significantly positive mean (median) of 8.8% (8.9%) for offers without a top-up option. The difference between offers with and without top-up options is statistically significant. It appears that top-up options are not beneficial to bidders, either. As with the target returns, the results are driven by tender offers in the pre-2007 period, as Panel B1 (B2) shows that there are (no) significant differences in bidder abnormal returns in the pre-2007 (post-2006) period.

[29] Note that the number of observations is substantially lower, when compared with target abnormal returns. This occurs because our sample includes a number of tender offers by private bidders. In regressions I attempt to control for systematic differences between private and public bids by including a private bidder dummy. In robustness section I also perform some analyses based on the sample of public tender offers in attempt to tease out whether there additional bidder characteristics have any effects on our findings.

Table 3.3 Univariate Comparison of Abnormal Returns

The table presents target and bidder CARs for the full sample, and subsamples of tender offer with and without top-up options. CARs are market adjusted returns where the market return is represented by the CRSP value-weighted index. I report differences (p-values) in means (t- test) and medians (Wilcoxon test). ***, **, *: Significant at the 1%, 5%, and 10% level, respectively.

| | With Top-up option (1) | | | Without Top-up option (2) | | | Difference (1)– (2) | |
|---|---|---|---|---|---|---|---|---|
| | Mean | Median | N | Mean | Median | N | *p*-value (mean) | *p*-value (median) |
| Panel A: Target CARs | | | | | | | | |
| (-1,+1) | 0.4095*** | 0.3201*** | 206 | 0.3823*** | 0.3126*** | 250 | 0.488 | 0.355 |
| (-20, x-date) | 0.4745*** | 0.3636*** | 206 | 0.5595*** | 0.4826*** | 250 | 0.077* | 0.002*** |
| (-42, x-date) | 0.5037*** | 0.4146*** | 206 | 0.5729*** | 0.4920*** | 250 | 0.152 | 0.018** |
| Panel A1 : Target CARs (Pre-2007) | | | | | | | | |
| (-1,+1) | 0.3858*** | 0.3405*** | 41 | 0.3927*** | 0.3126*** | 206 | 0.905 | 0.608 |
| (-20, x-date) | 0.4288*** | 0.3818*** | 41 | 0.5705*** | 0.5062*** | 206 | 0.068* | 0.059* |
| (-42, x-date) | 0.4650*** | 0.3649*** | 41 | 0.5961*** | 0.5303*** | 206 | 0.099* | 0.109 |
| Panel A2 : Target CARs (Post-2006) | | | | | | | | |
| (-1,+1) | 0.4152*** | 0.3148*** | 165 | 0.3336*** | 0.2881*** | 44 | 0.138 | 0.293 |
| (-20, x-date) | 0.4858*** | 0.3523*** | 165 | 0.5081*** | 0.3943*** | 44 | 0.809 | 0.409 |
| (-42, x-date) | 0.5133*** | 0.4170*** | 165 | 0.4643*** | 0.3971*** | 44 | 0.570 | 0.774 |
| Panel B: Bidder CARs | | | | | | | | |
| (-1,+1) | -0.0175*** | -0.0067*** | 124 | -0.0063 | -0.0023 | 139 | 0.206 | 0.172 |
| (-20, x-date) | 0.0033 | -0.0181 | 124 | 0.0433** | 0.0379** | 139 | 0.127 | 0.035** |
| (-42, x-date) | 0.0201 | -0.0139 | 124 | 0.0881*** | 0.0886*** | 139 | 0.029** | 0.001*** |
| Panel B1 : Bidder CARs (Pre-2007) | | | | | | | | |
| (-1,+1) | -0.0424** | -0.0150** | 25 | -0.0102 | -0.0063 | 119 | 0.067* | 0.075* |
| (-20, x-date) | -0.0523*** | -0.0648** | 25 | 0.0508** | 0.0540** | 119 | 0.002*** | 0.013** |
| (-42, x-date) | -0.0188 | -0.0339 | 25 | 0.1022*** | 0.1067*** | 119 | 0.003*** | 0.006*** |
| Panel B2 : Bidder CARs (Post-2006) | | | | | | | | |
| (-1,+1) | -0.0111* | -0.0047* | 99 | 0.0164 | 0.0166 | 20 | 0.037** | 0.031** |
| (-20, x-date) | 0.0173 | -0.0126 | 99 | -0.0014 | 0.0027 | 20 | 0.653 | 0.725 |
| (-42, x-date) | 0.0299* | 0.0012 | 99 | 0.0074 | 0.0152 | 20 | 0.614 | 0.823 |

### 3.5.2 Other Variables

Later in the paper, I investigate whether these results hold up in a multivariate framework. However, before I present the results of that multivariate analysis, I report characteristics of the control variables I employ in that analysis. Table 3.4 shows the means, medians, and number of

observations for each of these variables.[30] I also bifurcate the sample by whether the tender offer included a top-up option, or not. Additionally, I report my results, depending on whether the tender offer was made in the pre-2007 or post-2006 period. Starting with deal characteristics for the whole sample, Table 3.4, Panel A shows that the average (median) *Deal size* (from SDC)[31] is somewhat smaller (larger) when top-up options are included. The mean *Deal size* for tender offers with top-up options is $660 million, which is smaller than the $843 million for offers without top-up options. The median *Deal size* is $301 million versus $180 million for offers with and without top-up options, respectively. I include toeholds in my analysis (a toehold is the percent of shares already owned by the bidding firm at the time of the deal's announcement and is tabulated in the SDC database). A number of researchers have investigated the role that toeholds may play in M&A activity. Jarrell and Poulsen (1989), Eckbo and Langohr (1989), and Betton and Eckbo (2000), find that toeholds are negatively related to target returns. In contrast, Stulz, Walkling, and Song (1990) and Burch (2001) do not find any effects, and Franks and Harris (1989) find positive effects. The effects of toeholds on bidder returns are found to be positive by Betton and Eckbo (2000), but Burch (2001) reports insignificant regression coefficients. I find that the mean value for *Toehold* is 0.9% for offers with top-up options, whereas it is statistically larger for bids without top-options, with a mean of 2.5%. This is perhaps not surprising if having a toehold implies that a bidder already has a percentage of the shares of the target and it may therefore be relatively easier to acquire the necessary remaining shares. However, one could argue that having a toehold may make it easier to negotiate a top-up option which would suggest an opposite relation. In this case, having a toehold may indicate that the bidder has private information about the target and wants to capitalize on it with a relatively speedy close. The next variable that I include in my regressions is *Non-cash*

[30] Table 3.4 also includes summary statistics for other variables I use in later analyses in the chapter.
[31] Note detailed definitions of selected variables are provided in Appendix 4.

*bid*. This variable (from SDC) is a dummy that is equal to 1 if the bid was not 100% cash. There is a voluminous literature that investigates the method of payment in M&A. The basic tenet is that cash bids tend to be viewed more positively by both bidder and target shareholders (see for instance Jensen and Ruback, 1983; Fishman, 1989; Travlos, 1987; Brown and Ryngaert, 1991; Martin, 1996; and Fu, Lin, and Officer, 2013). I find that 10% of top-up option bids are of the non-cash type. This is significantly different from the 20% of non-top-up option bids. Perhaps, this is a function of the fact that top-up bids, by definition, do include bidder shares as a means of payment, in case the top-up option gets exercised.

Hostility is well known to have effects on M&A negotiation. However, as Schwert (2000) notes it is difficult to measure hostility in bids. I measure hostility by following SDC's convention. I create a dummy, labeled *Hostile* that is equal to 1 when a bid is labeled as hostile by SDC. Hostility can be consistent with an aggressive bargaining strategy of target management (Schwert 2000). If this is true one expects target (bidder) returns to be relatively high (low) surrounding a tender offer. Burch (2001) presents evidence consistent with this assertion. Not surprising, I find that top-up option bids are associated with less hostility. Only 4% of tender offers with top-up options are labeled hostile versus 22% of the bids without top-up options. Clearly, in order to receive a top-up option from target management hostility is not helpful.

Table 3.4 Univariate Comparison of Control Variables

The table presents mean, median and number of observations (N) various deal, target, and bidder characteristics for the full sample, and subsamples of tender offers with and without top-up options. Panel A1 (A2) reports for the 2000-2006 (2007-2012) period. Definitions of all variables are explained in Appendix 4. I report differences (*P*-values) in means (t- test) and medians (Wilcoxon test). ***, **, *: Significant at the 1%, 5%, and 10% level, respectively.

| | Top-up option | | (1) | No Top-up option | | (2) | Difference (1)– (2) | |
|---|---|---|---|---|---|---|---|---|
| | Mean | Median | N | Mean | Median | N | *p*-value (Mean) | *p*-value (Median) |
| Panel A: All tender offers | | | | | | | | |
| *Deal Characteristics* | | | | | | | | |
| Deal size ($10^6$) | 660.12 | 300.50 | 206 | 843.26 | 180.07 | 250 | 0.2037 | 0.0677* |
| Toehold (%) | 0.90 | 0.00 | 206 | 2.48 | 0.00 | 250 | 0.0077*** | 0.0142** |
| Non-cash bid | 0.10 | 0.00 | 206 | 0.20 | 0.00 | 250 | 0.0031*** | 0.0041*** |
| Hostile | 0.04 | 0.00 | 206 | 0.22 | 0.00 | 250 | 0.0001*** | 0.0001*** |
| Termination fee | 0.17 | 0.00 | 206 | 0.12 | 0.00 | 250 | 0.2183 | 0.2128 |
| Lock-up option | 0.02 | 0.00 | 206 | 0.02 | 0.00 | 250 | 0.7594 | 0.7579 |
| Diversifying | 0.691. | 1.00 | 206 | 0.68 | 1.00 | 250 | 0.9190 | 0.9193 |
| Completion | 0.95 | 1.00 | 206 | 0.80 | 1.00 | 250 | 0.0001*** | 0.0001*** |
| Delaware | 0.75 | 1.00 | 206 | 0.71 | 1.00 | 250 | 0.3319 | 0.3338 |
| Duration | 64.65 | 47.00 | 206 | 89.98 | 63.00 | 245 | 0.0001*** | 0.0001*** |
| Relative value | 0.12 | 0.04 | 124 | 0.19 | 0.08 | 139 | 0.0278** | 0.0010*** |
| Private bidder | 0.33 | 0.00 | 206 | 0.36 | 0.00 | 250 | 0.4910 | 0.4916 |
| *Target Characteristics* | | | | | | | | |
| Lnsize | 5.17 | 4.94 | 206 | 5.39 | 5.22 | 250 | 0.1182 | 0.3843 |
| M-to-B | 1.87 | 1.50 | 206 | 1.61 | 1.20 | 242 | 0.0394*** | 0.0001*** |
| FCF | -0.01 | 0.06 | 206 | 0.00 | 0.08 | 238 | 0.5927 | 0.1189*** |
| Leverage | 0.16 | 0.05 | 206 | 0.22 | 0.18 | 248 | 0.0006*** | 0.0001*** |
| Profitability | 0.01 | 0.07 | 206 | 0.02 | 0.09 | 249 | 0.5203 | 0.1599 |
| Stdev of returns | 0.040 | 0.035 | 205 | 0.048 | 0.041 | 250 | 0.0007*** | 0.0057*** |
| Age of target | 24.85 | 20.00 | 206 | 29.69 | 20.00 | 250 | 0.0288** | 0.7487 |
| G-index | 8.67 | 9.00 | 51 | 8.78 | 8.00 | 80 | 0.8027 | 0.9506 |
| *Bidder Characteristics* | | | | | | | | |
| Lnsize | 8.55 | 8.64 | 124 | 7.75 | 7.84 | 139 | 0.0006*** | 0.0007*** |
| Tobin's Q | 2.41 | 1.88 | 124 | 2.30 | 1.73 | 138 | 0.5954 | 0.1020 |
| FCF | 0.11 | 0.11 | 120 | 0.10 | 0.11 | 123 | 0.1475 | 0.3163 |
| Profitability | 0.16 | 0.16 | 123 | 0.14 | 0.14 | 137 | 0.0316** | 0.0682* |
| St.dev of returns | 0.026 | 0.022 | 124 | 0.033 | 0.027 | 139 | 0.0003*** | 0.0001*** |

| Panel A1: Sample Characteristics (Pre-2007) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| *Deal Characteristics* | | | | | | | | |
| Deal size ($10^6$) | 291.15 | 174.98 | 41 | 828.12 | 172.58 | 206 | 0.0002*** | 0.2652 |
| Toehold (%) | 0.43 | 0.00 | 41 | 1.96 | 0.00 | 206 | 0.0111** | 0.2433 |
| Non-cash bid | 0.12 | 0.00 | 41 | 0.21 | 0.00 | 206 | 0.1259 | 0.1805 |
| Hostile | 0.07 | 0.00 | 41 | 0.15 | 0.00 | 198 | 0.1127 | 0.1910 |
| Termination fee | 0.03 | 0.00 | 41 | 0.13 | 0.00 | 206 | 0.0030*** | 0.0572* |
| Lock-up option | 0.12 | 0.00 | 41 | 0.02 | 0.00 | 206 | 0.0713* | 0.0039*** |
| Diversifying | 0.78 | 1.00 | 41 | 0.66 | 1.00 | 206 | 0.0931* | 0.1189 |
| Completion | 0.98 | 1.00 | 41 | 0.84 | 1.00 | 206 | 0.0001*** | 0.0187** |
| Delaware | 0.73 | 1.00 | 41 | 0.69 | 1.00 | 206 | 0.6282 | 0.6336 |
| Duration | 58.39 | 51.00 | 41 | 87.10 | 61.00 | 202 | 0.0001*** | 0.0060*** |
| Relative value | 0.06 | 0.03 | 25 | 0.19 | 0.08 | 119 | 0.0001*** | 0.0015*** |
| Private bidder | 0.27 | 0.00 | 41 | 0.32 | 0.00 | 206 | 0.5028 | 0.5126 |
| *Target Characteristics* | | | | | | | | |
| Lnsize | 4.74 | 4.72 | 41 | 5.25 | 5.11 | 206 | 0.0070*** | 0.0853* |
| Lock-up option | 0.122 | 0.00 | 41 | 0.02 | 0.00 | 206 | 0.0713* | 0.0039*** |
| M-to-B | 1.70 | 1.27 | 40 | 1.62 | 1.18 | 204 | 0.7565 | 0.2784 |
| FCF | -0.01 | 0.06 | 41 | 0.01 | 0.09 | 206 | 0.7405 | 0.3165 |
| Leverage | 0.18 | 0.08 | 41 | 0.23 | 0.18 | 197 | 0.2949 | 0.1922 |
| Profitability | 0.01 | 0.07 | 40 | 0.03 | 0.10 | 206 | 0.6397 | 0.2810 |
| St.dev of returns | 0.048 | 0.040 | 40 | 0.048 | 0.043 | 206 | 0.9675 | 0.9893 |
| Age of Target | 21.10 | 17.00 | 41 | 28.74 | 19.00 | 206 | 0.0423** | 0.1757 |
| G-index | 8.89 | 9.00 | 45 | 9.67 | 10.00 | 15 | 0.2801 | 0.2338 |
| *Bidder Characteristics* | | | | | | | | |
| Lnsize | 7.97 | 7.91 | 25 | 7.59 | 7.65 | 119 | 0.3253 | 0.3546 |
| Tobin's Q | 3.31 | 2.50 | 25 | 2.33 | 1.72 | 118 | 0.0555* | 0.0099*** |
| FCF | 0.12 | 0.13 | 24 | 0.10 | 0.11 | 106 | 0.4244 | 0.1065 |
| Profitability | 0.16 | 0.18 | 24 | 0.14 | 0.15 | 117 | 0.2997 | 0.1335 |
| St.dev of returns | 0.029 | 0.025 | 25 | 0.034 | 0.028 | 119 | 0.1506 | 0.1261 |

| Panel A2: Sample Characteristics (Post-2006) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| *Deal Characteristics* | | | | | | | | |
| Deal size ($10^6$) | 751.18 | 326.03 | 165 | 914.15 | 249.42 | 44 | 0.5279 | 0.4649 |
| Toehold (%) | 1.02 | 0.00 | 165 | 4.90 | 0.00 | 44 | 0.0220** | 0.0004*** |
| Non-cash bid | 0.10 | 0.00 | 165 | 0.14 | 0.00 | 44 | 0.4937 | 0.4520 |
| Hostile | 0.04 | 0.00 | 165 | 0.52 | 1.00 | 44 | 0.0001*** | 0.0001*** |
| Termination Fee | 0.20 | 0.00 | 165 | 0.11 | 0.00 | 44 | 0.1376 | 0.1887 |
| Lock-up option | 0.00 | 0.00 | 165 | 0.00 | 0.00 | 44 | ------- | ------- |
| Diversifying | 0.66 | 1.00 | 165 | 0.80 | 1.00 | 44 | 0.0640* | 0.0871* |
| Completion | 0.94 | 1.00 | 165 | 0.61 | 1.00 | 44 | 0.0001*** | 0.0001*** |
| Delaware | 0.76 | 1.00 | 165 | 0.80 | 1.00 | 44 | 0.5903 | 0.6004 |
| Duration | 66.26 | 47.00 | 165 | 103.54 | 89.00 | 44 | 0.0032*** | 0.0004*** |
| Relative Value | 0.13 | 0.05 | 99 | 0.18 | 0.07 | 20 | 0.4743 | 0.1626 |
| Private_Bidder | 0.34 | 0.00 | 165 | 0.52 | 1.00 | 44 | 0.0341** | 0.0263** |
| *Target Characteristics* | | | | | | | | |
| Lnsize | 5.28 | 5.06 | 165 | 6.04 | 5.88 | 44 | 0.0342** | 0.0178** |
| M-to-B | 1.92 | 1.55 | 165 | 1.54 | 1.27 | 44 | 0.0458*** | 0.0174** |
| FCF | -0.01 | 0.06 | 165 | -0.03 | 0.03 | 44 | 0.7530 | 0.5379 |
| Leverage | 0.15 | 0.42 | 165 | 0.23 | 0.23 | 44 | 0.0258*** | 0.0074*** |
| Profitability | 0.01 | 0.07 | 165 | -0.01 | 0.07 | 44 | 0.6941 | 0.4945 |
| St.dev of returns | 0.038 | 0.035 | 165 | 0.048 | 0.034 | 44 | 0.1805 | 0.8042 |
| Age of Target | 25.79 | 21.00 | 165 | 34.16 | 26.50 | 44 | 0.0789* | 0.0810* |
| G-index | 7.00 | 7.00 | 6 | 8.57 | 8.00 | 80 | 0.2678 | 0.1680 |
| *Bidder Characteristics* | | | | | | | | |
| Lnsize | 8.70 | 8.88 | 99 | 8.70 | 9.16 | 20 | 0.9889 | 0.8451 |
| Tobin's Q | 2.18 | 1.78 | 99 | 2.14 | 1.90 | 20 | 0.9273 | 0.4323 |
| FCF | 0.11 | 0.11 | 96 | 0.09 | 0.11 | 17 | 0.4923 | 0.9200 |
| Profitability | 0.16 | 0.15 | 99 | 0.12 | 0.13 | 20 | 0.2105 | 0.3011 |
| St.dev of returns | 0.025 | 0.022 | 99 | 0.027 | 0.022 | 20 | 0.6725 | 0.8506 |

I do not find any significant differences in *Termination fee* (defined as an indicator variable equal to one if a termination fee is included in the offer, as reported in SDC),[32] the use of *lock-up options* (defined as a dummy variable that takes the value of one if a lock-up option is included as reported by SDC), whether the merger is *diversifying* in nature (a dummy equal to one if the bidder and target share the same four-digit primary SIC code and zero otherwise), whether the target is incorporated in *Delaware* or not, and whether the bidder is private or public.[33] The latter finding is important given that there is some anecdotal evidence that top-up options are a tool that seemed to be used primarily by private bidders (note that private bidders do not need to worry about the 20% rule that is imposed by being listed, as discussed in the introduction). Consistent with the assertion that top-up options speed up the tender offer process and increase the probability of completion. To be precise, it takes an average of 65 days to resolve an offer that includes a top-up option while it takes 90 days for offers without this feature. I find that the completion rate (*Completion*) for offers with top-up options is significantly higher (95% versus 80%) and that these offers are resolved faster. Finally, I find that deals with top-options have target values that are significantly smaller than those without. The mean (median) *Relative value* for top-up bids are 0.12 (0.04) versus 0.19 (0.08) for deals without this feature.

Turning to characteristics of the target, I find that the market to book (*M-to-B*) ratio of the target (defined as the target's total assets minus book value of equity plus market value of equity,

[32] Note that Bates and Lemmon (2003) find that termination fee grants targets have a significantly positive effect on the probability of deal completion and hence truncate the bidding process. Since top-up options also have similar effects it is not surprising that targets that grant top-up options do not also grant termination fees.

[33] Previous literature (e.g., Bates and Lemmon, 2003; Officer, 2003) suggests that termination fees are related to higher target returns and not related to bidder returns. Lock-up options are found to be (e.g., Burch, 2001) related to higher target returns. Acquisitions that are focusing in nature are usually found to be relatively synergistic (e.g., Devos, et al, 2009; Morck, Shleifer, and Vishny 1990), and therefore bidder and target abnormal returns should be negatively related to our diversifying dummy. Targets incorporated in Delaware had higher bid premiums (Bargeron, 2012) and received takeover bids (Daines, 2001).

divided by total assets[34]) is significantly larger for tender offers with top-up options (the mean and median is 1.87 and 1.50, respectively) when compared to offers without (mean and median of 1.61 and 1.20, respectively). Similarly, firms that are the target of a tender offer that includes a top-up option have less *Leverage* (which is defined as long-term debt plus current liabilities, divided by total assets) and have a somewhat lower free cash flow (*FCF*) (defined as operating income before depreciation minus total income taxes [less the change in deferred taxes from the previous to the current year] minus preferred and common stock dividends, scaled by total assets). Firms that are targets of bids with top-up options also exhibit a significantly lower *Standard deviation of returns* (calculated as standard deviation of stock returns over period from trading day -253 to -45 relative to the announcement date) and are somewhat younger (*Age of the target* calculated in years as the difference between the year of the announcement and the year of foundation/incorporation). The target firm characteristics I control for in my regressions are size (*Lnsize*, defined as the log of target assets), and *profitability* (defined as operating income before depreciation scaled by total assets). I do not find any significant differences for these variables, when my sample is split into offers with or without top-up options. My final set of control variables are various bidder firm characteristics. These are defined similarly to those for the target firms. I find significant differences in bidder characteristics in that bidders that employ a top-up option are bigger and more profitable, and exhibit a lower standard deviation of returns.

In Panels A1 and A2 I split the sample by time period. Although most inferences are qualitatively similar to those derived from Panel A, there are some interesting patterns that emerge. First, while there are differences in hostility between tender offers with and without top-up options

[34] All accounting ratios are winsorized at 1% and 99% and all accounting data are from Compustat at the end of the fiscal year prior to the merger announcement.

in the whole sample and the post-2006 period, I do not find differences in the pre-2007 period. In contrast, I find differences in termination fees in the pre-2007 period (they are lower for top-up bids) whereas there are no significant differences for the whole sample nor the post-2006 period. Even more interesting, I find that lock-up options are not used in any of my sample tender offers in the post-2006 period. They were used in the pre-2007 period and there were significant differences between top-up and non-top-up tender offers. This suggests that there may be some relation between these variables and that the relation between these various deal characteristics changed after 2006. Later in the chapter, I investigate this issue in more detail. Another interesting result is that in the post-2006 period there seems to be a significant increase in bids by private bidders who use top-up options. When I compare the two sample periods and look at target characteristics I find that differences in *M-to-B* become significant in the post-2006 period (i.e., targets of top-bids have relatively larger M-to-B valuations). Similarly, for post-2006 deals with top-up options, targets` leverage was significantly lower than for targets in non-top-up deals. For bidder characteristics I find that in my comparison of bids with and without top-up options in the pre-2007 period there are no differences, other than for Tobin's Q. In the post-2006 period there are no differences in target characteristics between the two types of bids.

### 3.5.3 Wealth Effects of Top-up Options –Multivariate Analysis

In Table 3.5 I report the results of multivariate analysis in which target abnormal returns, calculated over the various windows around the tender offer announcement are the dependent variables. Given that the previous tables reported substantial differences, depending on whether the tender offer was made pre-2007 or post-2006, I run separate regressions for my two time intervals, pre-2007 and post-2006. The first regression shows coefficients when I use target abnormal returns (-42, ex-date) as dependent variable and use observations in the pre-2007 period.

## Table 3.5 Regressions on Target Returns

Below are OLS regressions where the dependent variable is the target announcement return. Announcement returns are cumulative abnormal returns (CARs) from -42 to +x date. CARs are calculated by subtracting the value-weighted return on the CRSP index from the firm return. *Top-up* (0/1) equals 1 if a top-up option is present and 0 otherwise. Definitions of all variables are explained in Appendix 4. Two-tailed White's heteroscedasticity-consistent *P*-values are in parentheses. ***, **, *: Significant at the 1%, 5%, and 10% level, respectively.

| | -42 – x date | | -20 – x date | | -1 to +1 | |
|---|---|---|---|---|---|---|
| | Pre-2007 | Post -2006 | Pre-2007 | Post -2006 | Pre-2007 | Post -2006 |
| Model | (1) | (2) | (3) | (4) | (5) | (6) |
| Top-up (0/1) | -0.1707** | 0.0003 | -0.1933*** | -0.1149 | -0.0528 | 0.0290 |
| | (0.029) | (0.998) | (0.009) | (0.322) | (0.414) | (0.762) |
| Toehold | -0.0032 | -0.0005 | -0.0020 | 0.0001 | -0.0023 | -0.0041 |
| | (0.496) | (0.932) | (0.587) | (0.984) | (0.184) | (0.335) |
| Non-cash bid | 0.1273 | -0.1553 | 0.1106 | -0.1134 | 0.1014 | -0.1058 |
| | (0.159) | (0.121) | (0.225) | (0.275) | (0.166) | (0.225) |
| Hostile | -0.2228 | -0.0480 | -0.1342 | -0.1597 | -0.1131** | -0.1407* |
| | (0.170) | (0.644) | (0.205) | (0.148) | (0.026) | (0.071) |
| M- to-B | -0.0827*** | -0.0615** | -0.0728*** | -0.0461* | -0.0527*** | -0.0369 |
| | (0.000) | (0.019) | (0.001) | (0.094) | (0.001) | (0.101) |
| Leverage | -0.0691 | 0.3564** | -0.1331 | 0.3456* | -0.1448 | 0.3435** |
| | (0.745) | (0.042) | (0.541) | (0.079) | (0.189) | (0.040) |
| FCF | -0.0892 | -0.9309*** | -0.0380 | -0.9123*** | 0.0378 | -0.5893*** |
| | (0.634) | (0.000) | (0.861) | (0.000) | (0.824) | (0.000) |
| Lnsize | 0.0216 | -0.0323 | 0.0186 | -0.0401 | -0.0025 | -0.0227 |
| | (0.377) | (0.234) | (0.438) | (0.167) | (0.891) | (0.184) |
| Termination Fee | -0.0550 | 0.0346 | -0.0605 | -0.0141 | -0.1423** | -0.0273 |
| | (0.554) | (0.646) | (0.450) | (0.849) | (0.012) | (0.701) |
| Lock-up option | 0.1571 | | 0.2651* | | 0.1158 | |
| | (0.325) | | (0.056) | | (0.390) | |
| Diversifying | 0.0435 | 0.0960 | 0.0489 | 0.1220** | 0.0623 | 0.1101** |
| | (0.503) | (0.104) | (0.446) | (0.040) | (0.204) | (0.040) |
| Private_Bidder | -0.0626 | -0.1573** | -0.0302 | -0.0929 | 0.0356 | -0.0561 |
| | (0.410) | (0.045) | (0.682) | (0.239) | (0.510) | (0.424) |
| Delaware | -0.1232* | 0.0635 | -0.0651 | 0.0278 | -0.0162 | 0.0305 |
| | (0.077) | (0.408) | (0.321) | (0.719) | (0.761) | (0.523) |
| Age | -0.0017 | -0.0001 | -0.0012 | -0.0003 | -0.0013 | -0.0003 |
| | (0.160) | (0.939) | (0.320) | (0.854) | (0.121) | (0.827) |
| Intercept | 0.7533*** | 0.6967*** | 0.6651*** | 0.8048*** | 0.5275*** | 0.4833*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.002) |
| Observations | 229 | 198 | 229 | 198 | 229 | 198 |
| R-squared | 0.126 | 0.246 | 0.101 | 0.254 | 0.097 | 0.197 |

The regression coefficient on the variable of interest, *Top-up* (which is a simple dummy variable equal to 1 if a top-up option is included in the offer, 0 otherwise) is significantly different from zero, with a p-value of 0.03[35]. Surprisingly, other than target *M-to-B* and the *Delaware* dummy variables, none of the other variables are significant. In addition to statistical significance, the main result of this regression is economically significant as well. Ceteris paribus, the presence of a top-up option lowers target returns by about 17% during the period spanning 42 days prior to the announcement until the ex-date. Consistent with my univariate analysis the top-up dummy is not statistically significant in the post-2006 period. I find results similar to the longest window when I start the calculation of abnormal returns only 20 days prior to the announcement. Again, consistent with the univariate analysis I do not find significance on the Top-up dummy variable when the calculation of abnormal returns are limited to the 3-day window.

I now turn my attention to the regressions in Table 3.6, where the dependent variable is the bidder abnormal returns. Again, consistent with the univariate findings I find that top-up options are negatively related to bidder abnormal returns and that this effect is primarily concentrated in tender offers with top-up options in the pre-2007 period. Specifically, the significant (at the 1% level) negative regression coefficient on the top-up dummy is -0.13. I find no effect in the post-2006 period. Finally, the results are similar for the -20 to ex-date window, however in the shorter window (-1, 1) there seems to be a negative effect in both the pre-2007 and post-2006 periods. Again, I estimate the pre-2007 regression without the lock-up option dummy. My results do not change materially. Overall, the results in this section confirm that top-up options have a negative

[35] In all OLS models I estimate the standard errors using White's (1980) heteroscedasticity consistent covariance matrix.

effect on target and bidder shareholder wealth, which is most consistent with the anti-competitive hypothesis.

Table 3.6 Regressions on Bidder Returns

Below are OLS regressions where the dependent variable is the bidder announcement returns. Announcement returns are cumulative abnormal returns (CARs) from -1 to +1 days around announcement. CARs are calculated by subtracting the value-weighted return on the CRSP index from the firm return. *Top-up* (0/1) equals 1 if a top-up option is present and 0 otherwise. Definitions of all variables are explained in Appendix 4. Two-tailed White's heteroscedasticity-consistent *P*-values are in parentheses. ***, **, *: Significant at the 1%, 5%, and 10% level, respectively.

| | -42 – x date | | -20 – x date | | -1 to +1 | |
|---|---|---|---|---|---|---|
| | Pre-2007 | Post-2006 | Pre-2007 | Post-2006 | Pre-2007 | Post-2006 |
| Model | (1) | (2) | (3) | (4) | (5) | (6) |
| Top-up (0/1) | -0.1317*** | 0.0114 | -0.0990** | 0.0024 | -0.0378* | -0.0369** |
| | (0.010) | (0.846) | (0.012) | (0.965) | (0.056) | (0.029) |
| Toehold | -0.0059 | 0.0071 | -0.0045 | 0.0085* | 0.0011* | -0.0027** |
| | (0.154) | (0.139) | (0.151) | (0.066) | (0.087) | (0.029) |
| Non-cash bid | 0.1151 | -0.0815 | 0.1020* | 0.0579 | 0.0097 | -0.0547** |
| | (0.124) | (0.265) | (0.083) | (0.384) | (0.526) | (0.013) |
| Hostile | 0.1701* | -0.0111 | 0.1261 | -0.0066 | 0.0255 | 0.0132 |
| | (0.092) | (0.848) | (0.136) | (0.899) | (0.153) | (0.454) |
| M- to-B | -0.0141 | -0.0196 | -0.0179 | -0.0073 | -0.0092 | -0.0022 |
| | (0.619) | (0.228) | (0.425) | (0.614) | (0.330) | (0.581) |
| Leverage | -0.1288 | 0.1326** | -0.0826 | 0.1444* | -0.0307 | 0.0237 |
| | (0.590) | (0.045) | (0.591) | (0.055) | (0.377) | (0.472) |
| FCF | 0.0881 | -0.0510 | -0.0278 | -0.0262 | 0.0197 | 0.0075 |
| | (0.572) | (0.611) | (0.812) | (0.779) | (0.517) | (0.764) |
| Lnsize | -0.0226 | -0.0069 | -0.0009 | -0.0042 | -0.0188*** | -0.0058 |
| | (0.365) | (0.668) | (0.966) | (0.776) | (0.001) | (0.207) |
| Termination Fee | -0.2237** | -0.0685 | -0.1849*** | -0.0948 | -0.0202 | -0.0122 |
| | (0.010) | (0.235) | (0.005) | (0.128) | (0.393) | (0.604) |
| Lock-up option | 0.0480 | | 0.0086 | | 0.0072 | |
| | (0.450) | | (0.884) | | (0.739) | |
| Diversifying | 0.0165 | -0.0405 | -0.0388 | -0.0356 | -0.0056 | -0.0212 |
| | (0.763) | (0.264) | (0.384) | (0.322) | (0.692) | (0.139) |
| Delaware | -0.0840 | -0.0100 | -0.0721 | -0.0193 | -0.0042 | -0.0285*** |
| | (0.172) | (0.726) | (0.162) | (0.519) | (0.780) | (0.006) |
| Intercept | 0.3169** | 0.1394 | 0.1654** | 0.1066 | 0.1021*** | 0.1015*** |
| | (0.016) | (0.267) | (0.016) | (0.359) | (0.001) | (0.007) |
| Observations | 132 | 118 | 132 | 118 | 132 | 118 |
| R-squared | 0.158 | 0.106 | 0.175 | 0.102 | 0.181 | 0.165 |

### 3.5.4 Determinants of the Use of Top-up Options

In Table 3.7, I analyze the determinants of the use of top-up options in more detail using a logistic regression analysis. As there is little theoretical work relating to the determinants of top-up options in tender offers, my analysis of these options is exploratory in nature. The dependent variable equals 1 if the tender offer included a top-up option, and 0 otherwise. The independent variables are similar to those used in the Table 3.5. Models 1, 2, and 3 show my results when I restrict the sample period to tender offers announced in the pre-2007 period. Models 4, 5, and 6 present my results when I run the same regressions for the post-2006 period. In the pre-2007 period, other than target size, which is marginally significant, only the dummy variable for lock-up options has a significant and positive coefficient. This suggests that the use of lock-up options and top-up options is positively related. Use of lock-up options disappeared in the post-2006 period, which explains why I cannot use it as an independent variable.[36] As noted in the introduction, it is possible that the use of top-up in bids is restricted when the target firm does not have enough authorized shares. Therefore, I use EAR (defined as the ratio of authorized shares to total outstanding shares in Chapter 2) to control for this issue and include it in my regressions. That is the only additional variable used in Model 3 and doing so does not alter my conclusions[37]. When I estimate Models 4-6 I find that there are more variables related to the use of a top-up option in tender offers in the post-2006 period. The regression coefficient on *Toehold* is significantly negative. This suggests that toeholds play a similar role in the post-2006 period as lock-up options did in the pre-2007 period, which would be consistent with Burch (2001) who suggests that lock-up options and toeholds may be substitutes.

[36] When I exclude the lock-up option dummy from model 1, results do not change considerably. The regression coefficients on Lnsize become insignificant (p-value = 0.12) and Diversifying become significant (p-value = 0.09).
[37] When I use a probit specification I obtain qualitatively similar results, these are available upon request.

Table 3.7 Logistic Regressions Of Top-Up Option Dummy On Deal Characteristics

Below are logistic regressions of a dummy variable equal to 1 if a top-up option is present and 0 otherwise on various deal characteristics. Definitions of all variables are explained in Appendix 4. *P*-values are shown in parentheses. ***, **, *: Significant at the 1%, 5%, and 10% level, respectively.

| | Pre-2007 | | | Post-2006 | | |
|---|---|---|---|---|---|---|
| Model | (1) | (2) | (3) | (4) | (5) | (6) |
| Toehold | -0.0614 | -0.0635 | -0.0627 | -0.0810** | -0.0816** | -0.0811** |
| | (0.130) | (0.118) | (0.118) | (0.017) | (0.014) | (0.013) |
| Non-cash bid | -0.4642 | -0.4408 | -0.4446 | -0.8532 | -0.8526 | -0.8678 |
| | (0.397) | (0.426) | (0.423) | (0.362) | (0.365) | (0.352) |
| Hostile | 0.0809 | -0.0380 | -0.0470 | -4.1349*** | -4.1477*** | -4.1049*** |
| | (0.904) | (0.955) | (0.946) | (0.000) | (0.000) | (0.000) |
| M- to-B | 0.0223 | 0.0215 | 0.0247 | 0.2054 | 0.2117 | 0.2063 |
| | (0.861) | (0.864) | (0.844) | (0.338) | (0.323) | (0.335) |
| Leverage | 0.3049 | -0.2638 | -0.2226 | 0.2759 | 0.2817 | 0.3078 |
| | (0.765) | (0.794) | (0.825) | (0.824) | (0.818) | (0.795) |
| FCF | 0.5396 | 0.6240 | 0.6448 | 2.8559** | 2.8677** | 2.9593* |
| | (0.490) | (0.429) | (0.413) | (0.031) | (0.029) | (0.027) |
| Termination Fee | -1.8655 | -1.8549 | -1.8348 | -0.0405 | -0.0087 | -0.0192 |
| | (0.143) | (0.137) | (0.143) | (0.963) | (0.992) | (0.983) |
| Lock-up option | 2.2909*** | 2.2326*** | 2.2349*** | | | |
| | (0.007) | (0.009) | (0.009) | | | |
| Lnsize | -0.2444* | -0.2219 | -0.2239 | -0.4086* | -0.4304* | -0.4362* |
| | (0.089) | (0.137) | (0.132) | (0.085) | (0.071) | (0.069) |
| Diversifying | 0.6810 | 0.6904 | 0.7010 | -1.5746** | -1.6018** | -1.5636** |
| | (0.116) | (0.116) | (0.108) | (0.038) | (0.032) | (0.035) |
| Private_Bidder | 0.3543 | -0.3582 | -0.3646 | -1.2495** | -1.2884** | -1.2677** |
| | (0.396) | (0.391) | (0.384) | (0.042) | (0.042) | (0.045) |
| Delaware | -0.2939 | 0.2541 | 0.2579 | -0.0787 | -0.0321 | -0.0337 |
| | (0.502) | (0.572) | (0.570) | (0.903) | (0.962) | (0.962) |
| Firm Age | | 0.0067 | -0.0068 | | 0.0039 | 0.0028 |
| | | (0.514) | (0.511) | | (0.728) | (0.797) |
| EAR | | | 0.0183 | | | -0.0604 |
| | | | (0.743) | | | (0.635) |
| Intercept | -0.8251 | -0.7590 | -0.8412 | 6.2523*** | 6.2552*** | 6.4436 |
| | (0.365) | (0.405) | (0.370) | (0.000) | (0.000) | (0.000) |
| N | 229 | 229 | 229 | 198 | 198 | 198 |
| Chi-square | 22.31 | 22.46 | 22.61 | 69.81 | 73.13 | 74.83 |
| | (0.034) | (0.049) | (0.067) | (0.000) | (0.000) | (0.000) |

In Section 3.5 I investigate the link between toeholds, lock-up options, top-up options, as well as termination fees in more detail. Not surprisingly, I find that hostility is negatively related to the

use of lock-up options. On the other hand, the finding that the private bidder dummy is negatively related to the use of top-up options runs counter to suggestions that private bidders are more likely to use these options. Finally, I find that target free cash flows (size and diversifying merger dummy) are positively (negatively) related to the use of top-up options. This positive relation between target free cash flow and use of top-up options indicate agency problems in the target. Similarly, negative association with top-up dummy and target size is also expected given that smaller firms are likely to have greater agency problems which will destroy value for shareholders. Both results support the anti-competitive hypothesis. On the other hand, negative association between diversifying merger dummy and top-up options is surprising given prior literature (Morck et al., 1990) shows that diversifying mergers have detrimental value effects.

## 3.6. Additional Analyses

### 3.6.1. Top-up Options, Lock-up Options, Toeholds, and Termination Fees

In this section, I further analyze the relation between top-up options, lock-up options, toeholds, and termination fees. One might argue that all of these may serve a similar purpose (i.e., eliminate competition or facilitate a smooth transaction). There is some evidence in the literature on relations between toeholds and lock-up options (Ravid and Spiegel 1999; Burch 2001), and toeholds and termination fees (Bates and Lemmon, 2003; Betton, Eckbo, and Thorburn, 2009). First, I graphically investigate the usage of top-up options, lock-up options, termination fees, and toeholds over time in Figure 3.1.

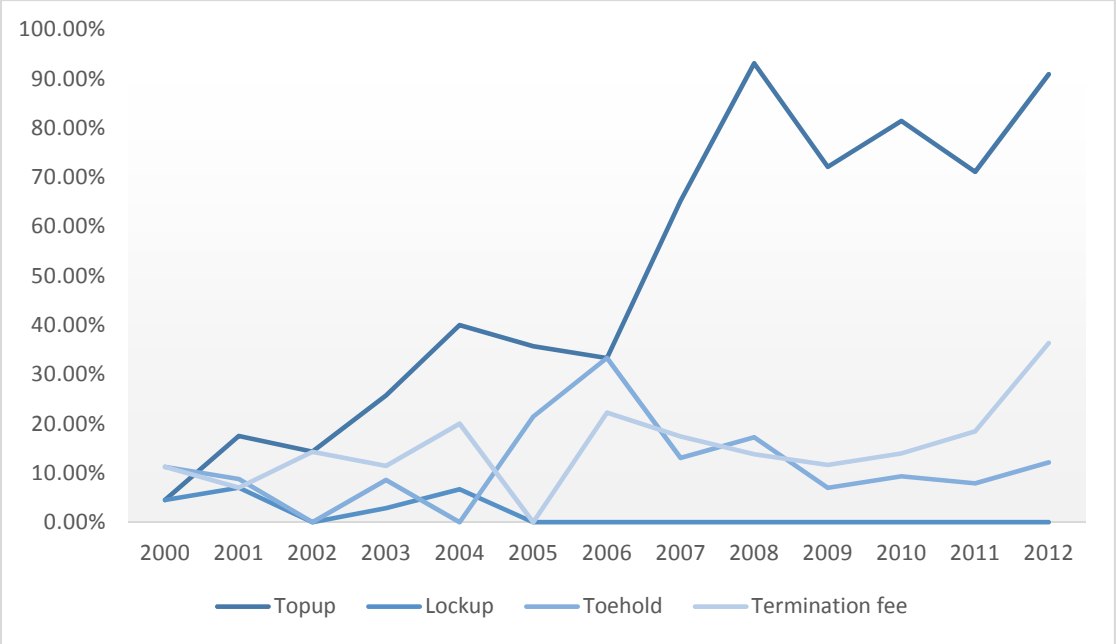


Figure 3.1 Use of Top-up Option, Lock-up Option, Toeholds, and Termination Fees

As reported before, the use of top-up options in tender offers increases dramatically over the sample period, particularly after 2006. At the same time I do not find use of lock-up options after 2006. The use of toeholds is more or less constant over my sample period, albeit there is a small spike in 2006 when about 33% of all tender offers included a toehold.[38] Finally, termination fees tend to be included in less than 20% of all bids, in any given year.

Next, I present a correlation matrix with Pearson correlation coefficients between my four variables of interest. I report these for the whole sample period and for the two sub-periods in Table 3.8. I find that during the entire sample period, there only exists significant correlation between toeholds and top-up options. There does not appear to be any substantial correlation between any of the other pairs of variables. However, when I spilt the full sample into two periods,

[38] This is a bit surprising given that Eckbo et al. (2009), in their review of bidding strategies note that toehold bidding has declined dramatically. Nevertheless there exists literature showing that toeholds benefit bidders (e.g., Walking, 1985; Betton and Eckbo, 2000; Betton, Eckbo, and Thornburn, 2008).

I do find substantial differences. Similar to my earlier analyses, I find that during the pre-2007 period, lock-up options are positively correlated with the use of top-up options. Nevertheless, top-up option inclusion in tender offers is also (somewhat weaker) negatively related to termination fees. This suggests that tender offers during this period which include a top-up option are indeed deemed to be friendly in nature. This is not surprising and similar to Schwert (2000) who claims that hostility is more likely to happen when target management is pursuing an aggressive bargaining strategy.

Table 3.8. Pearson Correlation Matrix

*Top-up* (0/1) equals 1 if a top-up option is present and 0 otherwise. *Lockup* option is an indicator variable equal to one if a lockup option is included. *Toehold* is the percent toehold held by the target at deal announcement. *Termination fee* is an indicator variable equal to one if a termination fee is included in the offer. *P*-values are in parentheses. ***, **, *: Significant at the 1%, 5%, and 10% level, respectively.

| Variable | Top-up (0/1) | Lock-up option | Toehold |
|---|---|---|---|
| Panel A: Correlation Matrix | | | |
| Lock-up option | 0.0145<br>(0.757) | | |
| Toehold | -0.1177**<br>(0.012) | -0.0197<br>(0.674) | |
| Termination fee | -0.0584<br>(0.213) | -0.0182<br>(0.698) | -0.0638<br>(0.1740) |
| Panel A1: Correlation Matrix (Pre-2007) | | | |
| Lock-up option | 0.1844***<br>(0.004) | | |
| Toehold | -0.0831<br>(0.193) | -0.0244<br>(0.702) | |
| Termination fee | -0.1214*<br>(0.057) | -0.0061<br>(0.924) | -0.0167<br>(0.795) |
| Panel A2: Correlation Matrix (Post-2006) | | | |
| Lock-up option | ----- | | |
| Toehold | -0.2473***<br>(0.000) | ----- | |
| Termination fee | -0.0913<br>(0.188) | ----- | -0.1164*<br>(0.093) |

Target management is not only granting a top-up option and a lock-up option, it also requires lower termination fees. In the post-2006 period, when lock-up options are no longer in use, toeholds take the place of lock-up options, in that they are larger when top-up options are included in the tender offer. Toeholds are negatively correlated with termination fees. This also supports my finding that deals with top-up options have lower premiums. For instance Officer (2003) finds that merger deals without target termination fees involve significantly lower premiums. In addition, it is somewhat unlikely that target managers of firms that are already partially owned by bidder firms feel obliged to include (large) termination fees. Although this would run counter to the idea that toeholds are more common in hostile bids (Eckbo et al. 2009).

### 3.7 Robustness Tests

In this section, I perform a number of robustness checks. First, I examine whether my results are sensitive to specific samples (i.e., completed deals) and inclusion of additional control variables (mainly based on availability of bidder data; i.e., public bidders) that may affect bidder or target CARs. Second, I use a two-stage least squares model in order to investigate whether top-up options are related to abnormal returns since the choice of including a top-up option clause in a tender offer can be a function of the expected returns.

#### 3.7.1 Completed Deals and Time to Completion

In this section, I investigate whether there are differences in my main findings, when I focus exclusively on completed deals. Given that the popular press suggests that deals with top-up options are more likely to be completed (see also my earlier univariate comparisons in Table 3.4) I investigate this claim. Out of a total sample of 456 deals, 396 were completed. First, in Table 3.9 I report the results of estimating a simple logistic regression, where the dependent variable is equal to 1 when the deal is completed, and zero otherwise. Consistent with my earlier analyses, and with the idea that top-up options facilitate speedy deal resolution, I find that the top-up dummy variable

is positive and statistically significant for both the pre-2007 and the post-2006 periods. Other than a dummy variable that represents diversifying deals (in the pre-2007 period), none of the other variables in the model are significant.

Table 3.9 Logistic Regressions of Completion On Top-Up Dummy and Deal Characteristics

Below are logistic regressions where dependent variable is equal to 1 if a tender offer is completed and 0 otherwise on regressed on various deal characteristics. Definitions of all variables are explained in Appendix 4. *P*-values are shown in parentheses. ***, **, *: Significant at the 1%, 5%, and 10% level, respectively.

| | Pre-2007 | | | Post-2006 | | |
|---|---|---|---|---|---|---|
| Model | (1) | (2) | (3) | (4) | (5) | (6) |
| Top-up (0/1) | 2.6501** | 2.6551** | 2.6535** | 2.6282*** | 2.7467*** | 2.7223*** |
| | (0.015) | (0.016) | (0.016) | (0.000) | (0.000) | (0.000) |
| Toehold | -0.0079 | -0.0098 | -0.0098 | -0.0334 | -0.0390 | -0.0384 |
| | (0.744) | (0.688) | (0.689) | (0.297) | (0.234) | (0.250) |
| Non-cash bid | -0.8103 | -0.7495 | -0.7477 | -0.1651 | -0.1318 | -0.1444 |
| | (0.115) | (0.149) | (0.151) | (0.829) | (0.862) | (0.849) |
| M-to-B | -0.0151 | -0.0181 | -0.0183 | 0.3447 | 0.3996 | 0.3906 |
| | (0.933) | (0.920) | (0.919) | (0.231) | (0.180) | (0.194) |
| Lnsize | -0.2347* | -0.1838 | -0.1843 | -0.0133 | -0.0312 | -0.0522 |
| | (0.083) | (0.199) | (0.200) | (0.926) | (0.834) | (0.732) |
| Diversifying | -1.2194** | -1.1854** | -1.8552** | 0.1201 | 0.0485 | 0.0534 |
| | (0.018) | (0.022) | (0.022) | (0.829) | (0.931) | (0.924) |
| Private_Bidder | -0.6887 | -0.6623 | -0.6605 | -0.1324 | -0.1519 | -0.1257 |
| | (0.155) | (0.174) | (0.177) | (0.806) | (0.778) | (0.817) |
| Firm Age | | -0.0076 | -0.0076 | | 0.0119 | 0.0107 |
| | | (0.291) | (0.291) | | (0.284) | (0.338) |
| EAR | | | 0.0028 | | | -0.0853 |
| | | | (0.962) | | | (0.462) |
| Intercept | 4.8096*** | 4.7236*** | 4.7154 | 1.7008 | 1.6698 | 2.0897 |
| | (0.000) | (0.000) | (0.000) | (0.292) | (0.305) | (0.231) |
| N | 238 | 238 | 238 | 205 | 205 | 205 |
| Year Dummies? | Yes | Yes | Yes | Yes | Yes | Yes |
| Chi-square | 35.05*** | 36.14*** | 36.14*** | 38.12*** | 39.33*** | 39.86*** |
| | (0.001) | (0.001) | (0.002) | (0.000) | (0.000) | (0.000) |

Table 3.10 OLS Regressions on Target Returns for Completed Deals

Below are OLS regressions where the dependent variable is the target announcement return. CARs are calculated by subtracting the value-weighted return on the CRSP index from the firm return. *Top-up* (0/1) equals 1 if a top-up option is present and 0 otherwise. Definitions of all variables are explained in Appendix 4. Two-tailed White's heteroscedasticity-consistent *P*-values are in parentheses. ***, **, *: Significant at the 1%, 5%, and 10% level, respectively.

| | -42 – x date | | -20 – x date | | -1 to +1 | |
|---|---|---|---|---|---|---|
| | Pre-2007 | Post -2006 | Pre-2007 | Post-2006 | Pre-2007 | Post-2006 |
| Models | (1) | (2) | (3) | (4) | (5) | (6) |
| Top-up (0/1) | -0.1471** | 0.0636 | -0.1522** | -0.0308 | -0.0757 | -0.0352 |
| | (0.046) | (0.569) | (0.029) | (0.783) | (0.248) | (0.735) |
| Toehold | -0.0086*** | -0.0017 | -0.0063*** | -0.0035 | -0.0022 | -0.0073 |
| | (0.003) | (0.791) | (0.007) | (0.961) | (0.170) | (0.121) |
| Non-cash bid | 0.1324 | -0.1666 | 0.1293 | -0.1267 | 0.0810 | -0.1692* |
| | (0.126) | (0.123) | (0.141) | (0.259) | (0.335) | (0.084) |
| Hostile | -0.0661 | 0.0491 | -0.0625 | -0.0625 | -0.1044* | -0.1850** |
| | (0.430) | (0.686) | (0.451) | (0.620) | (0.087) | (0.036) |
| M- to-B | -0.0693*** | -0.0844*** | -0.0587** | -0.0636** | -0.0660*** | -0.0552** |
| | (0.001) | (0.003) | (0.012) | (0.031) | (0.000) | (0.046) |
| Leverage | -0.3705** | 0.4220** | -0.4544*** | 0.4816** | -0.1391 | 0.4081** |
| | (0.027) | (0.024) | (0.005) | (0.022) | (0.262) | (0.026) |
| FCF | 0.0011 | -0.8981*** | 0.0123 | -0.8221*** | -0.0322 | -0.7342*** |
| | (0.995) | (0.000) | (0.955) | (0.000) | (0.862) | (0.000) |
| Lnsize | 0.0335 | -0.0165 | 0.0322 | -0.0322 | 0.0052 | -0.0130 |
| | (0.126) | (0.522) | (0.117) | (0.226) | (0.772) | (0.577) |
| Termination Fee | -0.1295 | -0.0005 | -0.0850 | -0.0374 | -0.1460** | -0.0423 |
| | (0.137) | (0.996) | (0.277) | (0.644) | (0.018) | (0.592) |
| Lock-up option | 0.2413 | | 0.3358** | | 0.1176 | |
| | (0.132) | | (0.022) | | (0.381) | |
| Diversifying | 0.0097 | 0.1173* | 0.0039 | 0.1365** | 0.0694 | 0.1360** |
| | (0.876) | (0.070) | (0.949) | (0.034) | (0.196) | (0.028) |
| Private_Bidder | 0.0624 | -0.1450* | 0.0759 | -0.0928 | 0.0453 | -0.0344 |
| | (0.368) | (0.094) | (0.261) | (0.275) | (0.451) | (0.665) |
| Delaware | -0.1119 | 0.0455 | -0.0751 | 0.0022 | -0.0267 | 0.0060 |
| | (0.101) | (0.499) | (0.252) | (0.972) | (0.644) | (0.912) |
| Age | -0.0024*** | -0.0007 | -0.0019** | -0.0007 | -0.0018** | -0.0008 |
| | (0.005) | (0.700) | (0.026) | (0.724) | (0.040) | (0.614) |
| Intercept | 0.7019*** | 0.6186*** | 0.6228*** | 0.7331*** | 0.5347*** | 0.5459*** |
| | (0.000) | (0.004) | (0.000) | (0.001) | (0.000) | (0.006) |
| Observations | 197 | 174 | 197 | 174 | 197 | 174 |
| R-squared | 0.150 | 0.220 | 0.146 | 0.214 | 0.114 | 0.223 |

When I re-estimate the target CAR regression models (reported in Table 3.10) and bidder target CAR regression models (reported in Table 3.11) I do not find material changes from the regression results reported in Table 3.5 and Table 3.6. The coefficient on the top-up dummy

variable remains negative and statistically significant for the pre-2007 period for the 43 and 21-day windows, for completed deals for targets. Similarly, I find that this coefficient remains negative and statistically significant for the pre-2007 period for the 43 and 21-day windows in the bidder CAR regressions. However, in this last set of regressions I no longer find the (negative) marginal significance for the 3-day window. Overall, it appears that limiting the sample to completed deals does not alter my conclusions.

Table 3. 11 OLS Regressions On Bidder Returns For Completed Deals

Below are OLS regressions where the dependent variable is the bidder announcement return. CARs are calculated by subtracting the value-weighted return on the CRSP index from the firm return. *Top-up* (0/1) equals 1 if a top-up option is present and 0 otherwise. Definitions of all variables are explained in Appendix 4. Two-tailed White's heteroscedasticity-consistent *P*-values are in parentheses. ***, **, *: Significant at the 1%, 5%, and 10% level, respectively.

| | -42 – x date | | -20 – x date | | -1 to +1 | |
|---|---|---|---|---|---|---|
| | Pre-2007 | Post-2006 | Pre-2007 | Post-2006 | Pre-2007 | Post -2006 |
| Models | (1) | (2) | (3) | (4) | (5) | (6) |
| Top-up (0/1) | -0.1218*** | 0.0276 | -0.0967*** | 0.0211 | -0.0180 | -0.0450** |
| | (0.002) | (0.625) | (0.005) | (0.709) | (0.269) | (0.028) |
| Toehold | -0.0070** | 0.0112*** | -0.0043* | 0.0120*** | 0.0010 | -0.0015** |
| | (0.026) | (0.002) | (0.056) | (0.002) | (0.159) | (0.049) |
| Non-cash bid | 0.1053* | 0.0636 | 0.1105** | 0.0303 | -0.0015 | -0.0457** |
| | (0.093) | (0.335) | (0.041) | (0.634) | (0.919) | (0.085) |
| Tobin`s Q (Bidder) | 0.0090 | -0.0194 | 0.0074 | -0.0169 | -0.0020 | -0.0457 |
| | (0.446) | (0.105) | (0.430) | (0.203) | (0.771) | (0.591) |
| FCF (Bidder) | 0.0181 | -0.2145 | -0.0214 | -0.1495 | 0.0872 | 0.0030 |
| | (0.938) | (0.613) | (0.915) | (0.709) | (0.503) | (0.713) |
| Lnsize (Bidder) | -0.0199 | -0.0255 | -0.0102 | -0.0245* | -0.0050* | -0.0015 |
| | (0.109) | (0.129) | (0.352) | (0.098) | (0.186) | (0.678) |
| Diversifying | 0.0305 | -0.0432 | -0.0113 | -0.0392 | -0.0104 | -0.0258* |
| | (0.549) | (0.278) | (0.789) | (0.318) | (0.505) | (0.096) |
| Relative Value | 0.1608 | -0.0429 | -0.1713 | -0.0347 | -0.0611 | -0.0245 |
| | (0.311) | (0.675) | (0.185) | (0.712) | (0.174) | (0.524) |
| Intercept | 0.191* | 0.3122* | 0.0894 | 0.2838* | 0.0378 | 0.0745* |
| | (0.091) | (0.063) | (0.339) | (0.068) | (0.230) | (0.080) |
| Observations | 117 | 105 | 117 | 105 | 117 | 105 |
| R-squared | 0.143 | 0.161 | 0.146 | 0.137 | 0.065 | 0.122 |

Related to deal completion is the issue of time to completion. I showed in Table 3.3 that tender offers with top-up options seemed to be completed much faster. In Table 3.12, I examine whether this is still the case after controlling for other factors that may influence completion time.

The table 3.12 reports the coefficient estimates of robust p-values from OLS regressions of the number of days from the announcement of the tender offer to the effective date of the deal on the top-up dummy and control variables. In Model 1 (2), I test the robustness of the correlation between top-up options and time to completion in the pre-2007 (post-2006) period. I find that the coefficient on the top-up option dummy variable is -22.69 (-36.99) and is significant with a p-value of 0.002 (0.006). This shows that tenders offers with top-up options are completed about 23 (37) days faster than the offers without. In column 3 and 4, I expand the model to include the control variables; toehold, non-cash bid dummy, M-to-B, Lnsize, Diversifying, and Private bidder.

First, I find that top-up option dummy variable is statistically significant at the five-percent level when all the control variables are included only in the pre-2007 period and this suggests that deals with top-up options were completed about 16 days faster. Second, I find that tender offers are completed faster for targets with higher M-to-B ratios and slower for larger targets during the pre-2007 period. Third, I find that both the private bidder dummy variable and the diversifying dummy variable are not significantly related to the speed of the completion of the deal. Finally, I find that having a toehold in the target delays the completion of the deal, especially during the post-2006 period.

Table 3.12 OLS Regressions on Duration of Completed Deals

Below are OLS regressions where the dependent variable is the duration of the completed deals. Duration is the number of days from the offer announcement until completion. Definitions of all variables are explained in Appendix 4. Two-tailed White's heteroscedasticity-consistent *P*-values are in parentheses. ***, **, *: Significant at the 1%, 5%, and 10% level, respectively.

| | Pre-2007 | Post -2006 | Pre-2007 | Post-2006 |
|---|---|---|---|---|
| Model | (1) | (2) | (3) | (4) |
| Top-up (0/1) | -22.6959***<br>(0.002) | -36.989***<br>(0.006) | -16.223**<br>(0.018) | -20.8968<br>(0.214) |
| Toehold | | | 1.5351<br>(0.203) | 3.2160**<br>(0.029) |
| Non-cash bid | | | -3.0501*<br>(0.808) | 23.4575<br>(0.333) |
| M-to-B | | | -3.3157**<br>(0.040) | -2.3628<br>(0.295) |
| Lnsize | | | 11.5334**<br>(0.018) | 3.7163<br>(0.432) |
| Diversifying | | | -7.6212<br>(0.421) | -14.6239<br>(0.122) |
| Private Bidder | | | 6.0701<br>(0.507) | 1.3296<br>(0.870) |
| Intercept | 81.2209***<br>(0.000) | 102.5185***<br>(0.000) | 27.8819<br>(0.204) | 75.7875**<br>(0.016) |
| Observations | 212 | 182 | 204 | 179 |
| R-squared | 0.018 | 0.052 | 0.139 | 0.159 |

### 3.6.2 Public Bidders

So far in this chapter, I have attempted to control for the fact that that bidders may be public or private by using a dummy variable, while keeping both types of tender offers in the sample. However, because of this, I am unable to use certain bidder characteristics in my regressions. By limiting the sample to tender offers of public bidders only, I am able to include some of these bidder characteristics in my regressions. Specifically, I now include bidder size (bigger bidders tend to perform worse in M&A [Moeller et al. (2004)], the bidder's Tobins' Q (some find positive effects on bidder CARs [e.g., Servaes, (1991)], negative [Morck, Sheifer, and Vishny (2004)], or ambiguous [Eckbo (2009)], bidder leverage and bidder FCF [(based on Jensen, (1986)], and relative size [Asquith, Bruner, and Mullins, (1983); Moeller, Schlingemann, and Stulz, (2004);

Masulis, Wang, and Xie, 2007)]. Table 3.13, presents the results of this additional analyses. Again, my main results are unaltered. Top-up options tend to be negatively related to bidder abnormal returns.

Table 3.13 OLS Regressions on Bidder Returns; Bidder Size, Tobin`s Q, Relative Deal Size

Below are OLS regressions where the dependent variable is the bidder announcement returns. CARs are calculated by subtracting the value-weighted return on the CRSP index from the firm return. Definitions of all variables are explained in Appendix 4. Two-tailed White's heteroscedasticity-consistent *P*-values are in parentheses. ***, **, *: Significant at the 1%, 5%, and 10% level, respectively.

| | -42 – x date | | -20 – x date | | -1 to +1 | |
|---|---|---|---|---|---|---|
| | Pre-2007 | Post-2006 | Pre-2007 | Post-2006 | Pre-2007 | Post-2006 |
| Model | (1) | (2) | (3) | (4) | (5) | (6) |
| Top-up (0/1) | -0.1126** | 0.0016 | -0.0925** | -0.0066 | -0.0251 | -0.0463** |
| | (0.014) | (0.975) | (0.020) | (0.889) | (0.143) | (0.010) |
| Toehold | -0.0070** | 0.0111* | -0.0047* | 0.0119* | 0.0011* | -0.0014* |
| | (0.042) | (0.064) | (0.075) | (0.088) | (0.138) | (0.059) |
| Non-cash bid | 0.0359 | 0.0386 | 0.0530 | 0.0105 | -0.0003 | -0.0518** |
| | (0.627) | (0.575) | (0.400) | (0.869) | (0.982) | (0.040) |
| Tobin`s Q (Bidder) | 0.0089 | -0.0093 | -0.0089 | -0.0085 | -0.0015 | -0.0028 |
| | (0.671) | (0.509) | (0.615) | (0.544) | (0.827) | (0.524) |
| FCF (Bidder) | 0.1887 | -0.4261 | 0.1323 | -0.3312 | 0.0849 | 0.0414 |
| | (0.619) | (0.243) | (0.590) | (0.331) | (0.428) | (0.680) |
| Lnsize (Bidder) | -0.0146 | -0.0272 | -0.0065 | -0.0261* | -0.0055* | -0.0013 |
| | (0.281) | (0.119) | (0.579) | (0.087) | (0.094) | (0.737) |
| Diversifying | -0.0057 | -0.0331 | -0.0410 | -0.0304 | -0.0076 | -0.0243 |
| | (0.919) | (0.429) | (0.395) | (0.445) | (0.614) | (0.120) |
| Relative Value | 0.1574 | -0.0483 | 0.1408 | -0.0469 | -0.0517 | -0.0193 |
| | (0.251) | (0.618) | (0.227) | (0.600) | (0.183) | (0.574) |
| Intercept | 0.2049* | 0.3503** | 0.1144 | 0.3245** | 0.0402 | 0.0733* |
| | (0.073) | (0.034) | (0.244) | (0.032) | (0.160) | (0.077) |
| Observations | 129 | 113 | 129 | 113 | 132 | 113 |
| R-squared | 0.120 | 0.167 | 0.127 | 0.160 | 0.072 | 0.143 |

### 3.7.3 Target CAR and Two-Stage Least Squares

In this part of the paper, I estimate a two-stage least squares (2SLS) model in order to investigate whether top-up options are related to abnormal returns (similar to Boone and Mulherin, 2007; Offenberg and Pirinsky, 2013) and control for endogeneity.

Table 3. 14 Target Returns and Top-up Option: Two-Stage Least Squares

Below are two-stage OLS regressions where the dependent variable is the target announcement return. In stage two dependent variables are cumulative abnormal returns (CARs) from -42 to +x date around announcement. Definitions of all variables are explained in Appendix 4. Two-tailed White's heteroscedasticity-consistent *P*-values are in parentheses. ***, **, *Indicate significance at the 1%, 5%, or 10% level, respectively.

*Panel A. First Stage: DV=Top up*

| Model | (1) |
|---|---|
| Toehold | -0.0080**<br>(0.026) |
| M-to-B | 0.0300<br>(0.107) |
| Leverage | -0.2984***<br>(0.013) |
| FCF | 1.0284**<br>(0.036) |
| lnsize | -0.0014<br>(0.939) |
| Profitability | -0.9683**<br>(0.044) |
| Delaware | 0.0315<br>(0.572) |
| Age | -0.0002<br>(0.875) |
| Non_cash | -0.1597**<br>(0.0210) |
| Termination | 0.0995<br>(0.157) |
| Lockup | 0.1899<br>(0.283) |
| Diversifying | 0.0282<br>(0.583) |
| Private | -0.0562<br>(0.290) |
| Intercept | 0.04936***<br>(<0.001) |
| Observations | 426 |
| R-squared | 0.077 |
| F value | 2.64*** |

*Panel B. second stage*

| | (1) | (2) | (3) |
|---|---|---|---|
| | -42 – x date | -20 – x date | -1 to +1 |
| Top-up (0/1) | -0.6528** | -0.5961** | -0.2512 |
| | (0.026) | (0.035) | (0.220) |
| Non-cash bid | 0.0629 | 0.0676 | 0.0371 |
| | (0.433) | (0.382) | (0.521) |
| Termination Fee | -0.0528 | -0.0749 | -0.1016* |
| | (0.520) | (0.345) | (0.086) |
| Lock-up option | 0.1024 | 0.1691 | 0.0582 |
| | (0.622) | (0.399) | (0.697) |
| Diversifying | 0.0511 | 0.0689 | 0.0745* |
| | (0.399) | (0.238) | (0.088) |
| Private_Bidder | -0.1023 | -0.0521 | -0.0063 |
| | (0.102) | (0.388) | (0.889) |
| Age | -0.0018 | -0.0015 | -0.0013 |
| | (0.156) | (0.230) | (0.156) |
| Hostile | -0.1323 | -0.1068 | -0.1409** |
| | (0.116) | (0.188) | (0.0200) |
| lnsize | -0.0259 | -0.0305 | -0.0186 |
| | (0.211) | (0.127) | (0.210) |
| Intercept | 1.0340*** | 0.9748*** | 0.6222*** |
| | (0.000) | (0.000) | (0.000) |
| Observations | 426 | 426 | 426 |

Table 3.14, Panel A presents the coefficient estimates from the first stage of the two-stage least squares estimation, while Panel B reports the findings from the second stage. I use the 2SLS since in the above analysis I treated the choice of a top-up option as an independent variable explaining returns. However, the choice of including a top-up option clause in a tender offer can be a function of the expected returns. Also, as reported by Hansen (1986) and Smith (1987) OLS regressions do not always provide consistent estimates. Hence, in this section, I use two-stage least squares specification to address for the endogeneity between the inclusion of a top-up option clause and the wealth effects. I find that tender offers with top-up options are associated with lower target CARs than tender offers without this feature. In the first model of Panel B (second stage), the regression coefficient on the instrumented top-up variable is negative and statistically significant,

with a p-value of 0.026. I find that the other control variables are insignificant. In addition, the main result is economically significant as well. Using the smaller (-21 till ex-date) window returns, I find results that are similar to those obtained when I use the longer window returns. Similar to my earlier findings, I do not find significance on the top-up dummy variable when I use -1 to 1 event window to calculate CARs.

### 3.7.4 Wealth Effects around Recommendation /Top-up Announcement Date

Table 3.15 shows abnormal returns to the bidder and target firms, for three different windows around the board recommendation date/Top-up option announcement date. This recommendation date/Top-up option announcement date is when the target board announces whether it recommends the shareholders accept or reject the tender offer by filing a SC 14D9 with SEC. I hand collect the recommendation of the target board by reading Item 4 (i.e., the solicitation or recommendation section) in SC 14D9. In some limited cases the board also announces that it's neutral to the offer. In the same report for the first time I see if the tender offer includes a top-up option clause. Hence I test the market`s reaction to this albeit it takes time for the market to impound the inclusion of a top-up option in a tender offer. I calculate market-adjusted cumulative abnormal returns, using the value weighted index (incl. dividends, from CRSP) as a proxy for market returns. Table 3.15, Panel A shows that in the three days surrounding the tender offer announcement (-1, +1, where 0 is the announcement date) target CARs are somewhat higher (though not statistically different) when a top-up option is included. The mean (median) three day CAR is 3.33% (0.21%) when a top-up option is included, whereas it is 2.67% (0.29%) if no top-up option is included. Both hypotheses predict relatively higher (or at least not lower) target CARs when a top-up option is included.

Table 3.15 Univariate Comparison of Abnormal Returns around Recommendation Date

The table presents target and bidder CARs for the full sample, and subsamples of tender offer with and without top-up options around the board recommendation date. CARs are market adjusted returns where the market return is represented by the CRSP value weighted index. I report differences (*P*-values) in means (t- test) and medians (Wilcoxon test). ***, **, *: Significant at the 1%, 5%, and 10% level, respectively.

| | With Top-up option (1) | | | Without Top-up option (2) | | | Difference (1)– (2) | |
|---|---|---|---|---|---|---|---|---|
| Event window | Mean | Median | N | Mean | Median | N | p-value (mean) | *p*-value (median) |
| Panel A: Target CARs | | | | | | | | |
| (-1,+1) | 0.0333** | 0.0021** | 200 | 0.0267*** | 0.0029*** | 189 | 0.686 | 0.618 |
| Panel A1 : Target CARs (Pre-2007) | | | | | | | | |
| (-1,+1) | 0.0129** | 0.0030* | 41 | 0.0286*** | 0.0048*** | 173 | 0.163 | 0.868 |
| Panel A2 : Target CARs (Post-2006) | | | | | | | | |
| (-1,+1) | 0.0384** | 0.0004* | 165 | 0.0069 | -0.0009 | 16 | 0.104 | 0.698 |
| Panel B: Bidder CARs | | | | | | | | |
| (-1,+1) | 0.0059* | 0.0026 | 124 | -0.0007 | -0.0021 | 108 | 0.296 | 0.176 |
| Panel B1 : Bidder CARs (Pre-2007) | | | | | | | | |
| (-1,+1) | 0.0029 | -0.0023 | 25 | -0.0001 | -0.0019 | 101 | 0.711 | 0.651 |
| Panel B2 : Bidder CARs (Post-2006) | | | | | | | | |
| (-1,+1) | 0.0066 | 0.0036 | 99 | -0.0099 | -0.0041 | 7 | 0.140 | 0.192 |

When I partition the sample temporally (pre-2007 and post-2006), important differences appear. Panels A1 and A2 clearly show that all the effects that were captured in Panel A are driven by tender offers with top-up options in the post-2006 period. In Panel B I report the CARs for bidder firms. I do not find any significantly returns for bidders. I also do not find any significant difference for tender offers that include a top-up option and do not. It appears that top-up options are not beneficial to bidders. Unlike the target returns, the results are not driven by tender offers in the post-2007 period, as Panel B1 (B2) shows that there are no significant differences in bidder abnormal returns in both sub-periods.

### 3.8. CEO and Board Characteristics

In this section, I empirically examine the impact of various target firm CEO characteristics and Board structures on the inclusion of a top-up option in tender offers and what happens to CEOs following the merger. I hand collect the data for CEO and board characteristics from the SEC

Edgar database. First, I report the univariate characteristics of these variables. Second, I use ordinary least squares models in order to investigate whether the top-up option dummy is robust to these agency cost proxies. I also examine if these variables affect the inclusion of a top-up option in a tender offer by running a logistic regression.

### 3.8.1 Univariate Analysis of CEO and Board Characteristics

Table 3.16 shows the means, medians, and number of observations for each of these variables. I also bifurcate the sample by whether the tender offer included a top-up option. Moreover, I report the results, depending on whether the tender offer was made in the pre-2007 or post-2006 period. The target firm's CEO is one of the most significant players during the takeover negotiation. As the leader of target, the CEO plays a key role in her firm's decisions leading up to a bid and during the negotiation of the terms of the potential deal. Hence, it is important to consider target CEOs' career concerns[39] and attributes such as age, tenure, and ownership. In many cases, mergers force target CEOs into early retirement, ending their CEO careers entirely. There is also evidence that target CEOs' retirement preferences impact merger outcomes. For instance Jenter and Lewellen (2013) documents that the likelihood of a takeover bid increases when the target CEO reaches age 65. Table 3.16, Panel A shows that the average (median) *CEO Age* is very similar in both groups. The mean *CEO Age* for tender offers with top-up options is 53.02, which is about the same as the 53.82 for offers without top-up options. The median *CEO Age* is 53.00 versus 54.00 for offers with and without top-up options, respectively. These results suggest that for the firms in my sample retirement concerns are not very likely to drive acquisition behavior. I include *CEO Tenure* in my analysis which is calculated as the number of years from the year the CEO

[39] CEOs generally lose their jobs as result of a takeover, and struggle to find a new position in a public firm (see Martin and McConnell, 1991; Agrawal and Walkling 1994, Hadlock, Houston, and Ryngaert 1999, and Hartzell, Ofek, and Yermack 2004).

takes office to the announcement year. A number of studies have examined the role that *CEO Tenure* may play in M&A activity. I find that the mean value for *CEO Tenure* is 6.75 years for offers with top-up options, it is not statistically larger for bids without top-up option, with a mean of 7.25. The next variable that I include in my regressions is *Chairman*. This variable (from SEC) is a dummy that is equal to 1 if the CEO of the target is also the Chairman of the board. The basic tenet is that if CEO is also the Chairman agency problems are greater (Yermack, 1996; Core, Holthausen, and Larcker, 1999). I find that 38% of targets with top-up options have Chairman CEOs. This is significantly less than non-top-up option offers which have 54%. *CEO ownership* is well known to have effects on M&A negotiation and value effects. I measure *CEO ownership* as the natural logarithm of 1+common stock owned by the target CEO at the year-end preceding the announcement divided by the total number of shares outstanding. I expect the level of *ownership* to be positively associated with incentive of the CEO to increase the buyer`s premium since the interests of CEO and shareholder`s better aligned (Yermack, 1995; Ofek and Yermack, 2000). Not surprisingly, I find that top-up option targets are associated with less CEO ownership. I find that the mean value for *CEO Ownership* is 0.05 for targets with top-up options, whereas it is statistically larger for bids without top-options, with a mean of 0.06. Clearly, in order to receive a top-up option from target *CEO Ownership* is important and indicates a potential agency problem. I do not find any significant differences in *Board Size* (defined as an number of members in Board, as reported in SEC filings), and whether board if *Staggered* or not (defined as a dummy variable that takes the value of if a board is staggered, based on SEC filings). However, I find that boards of targets that grant top-up options are more likely to be staggered especially in pre-2007 period. This is in line with the findings of Bebchuk and Cohen (2005) that staggered boards protect incumbents from a hostile takeover (Table 3.4 shows that deals with top-up options are less likely

to be hostile) and supports the prior literature that staggered boards destroy firm value (Daines, 2005; Faleye, 2007; and Ganor 2007).

The prior literature on golden parachutes and the acquisition likelihood relation generally find a positive association (such as Harris, 1990; Machlin et al., 1993; Cotter and Zenner, 1994; Born and Trahan, 1993; Agrawal and Knoeber, 1998; Lefanowicz et al., 2000; Bates et al., 2008; and Sokolyk, 2011). Accordingly, I expect targets that grant top-up options are more likely to have golden parachutes. Not surprisingly, I see that top-up option targets are associated with more parachutes. I find that the mean value for *Golden Parachute* is 0.40 for targets with top-up options, whereas it is statistically larger for bids without top-option, with a mean of 0.19. This also supports the finding of Fich et al. (2014) that there is a negative association between golden parachutes and acquisition premiums. In the next section, I test these variables in a multivariate setting to see if top-up dummy variable is robust to these agency/governance variables.

Next, I examine the career paths of target management after the tender offer is completed. Similar to Hartzell et. al. (2004) I attempt to determine whether target management is willing to take sub-optimal deals as a result of a quid-pro-quo deal. First, I look at whether target CEO (*Stays as CEO*) remained in the same top executive position following the acquisition. I find that 25% of targets CEO both with and top-up options stays as CEOs. These findings are similar to Hartzell et al. (2004) who finds that 23% of target CEOs keep their position following the merger. Second, I analyze whether target CEO (*Board Position*) joined the board of the acquirer. I see that target CEOs that grant top-up options are associated with no board position if the acquirer firm. I also document that the mean value for *Board Position* is 0.03 for targets without top-up options and it is statistically larger.

## Table 3.16 Univariate Comparison of CEO and Board Variables

The table presents mean, median and number of observations (N) various CEO and Board characteristics for the full sample, and subsamples of tender offers with and without top-up options. Panel A1 (A2) reports for the 2000-2006 (2007-2012) period. Definitions of all variables are explained in Appendix 4. I report differences (*P*-values) in means (t- test) and medians (Wilcoxon test). ***, **, *: Significant at the 1%, 5%, and 10% level, respectively.

| | Top-up option (1) | | | No Top-up option (2) | | | Difference (1)– (2) | |
|---|---|---|---|---|---|---|---|---|
| | Mean | Median | N | Mean | Median | N | p-value (mean) | *p*-value (median) |
| **Panel A: 2000-2012** | | | | | | | | |
| CEO Age | 53.02 | 53.00 | 206 | 53.82 | 54.00 | 250 | 0.3063 | 0.3088 |
| CEO Tenure | 6.75 | 5.00 | 206 | 7.25 | 4.00 | 250 | 0.4636 | 0.5356 |
| Chairman | 0.38 | 0.00 | 206 | 0.54 | 1.00 | 250 | 0.0009*** | 0.0010*** |
| CEO Ownership | 0.05 | 0.02 | 206 | 0.06 | 0.03 | 250 | 0.0269** | 0.3817 |
| Board Size | 7.42 | 7.00 | 206 | 7.52 | 7.00 | 250 | 0.6001 | 0.6845 |
| Staggered | 0.17 | 0.00 | 206 | 0.16 | 0.00 | 250 | 0.9144 | 0.9146 |
| Golden Parachute | 0.40 | 0.00 | 206 | 0.19 | 0.00 | 250 | 0.0001*** | 0.0001*** |
| Stays as CEO | 0.25 | 0.00 | 206 | 0.25 | 0.00 | 250 | 0.9722 | 0.9725 |
| Board Position | 0.00 | 0.00 | 206 | 0.03 | 0.00 | 250 | 0.0079*** | 0.0159*** |
| **Panel A1: Pre-2007** | | | | | | | | |
| CEO Age | 48.90 | 48.00 | 41 | 53.61 | 54.00 | 206 | 0.0011*** | 0.0015*** |
| CEO Tenure | 7.56 | 5.00 | 41 | 7.13 | 4.00 | 206 | 0.7412 | 0.8417 |
| Chairman | 0.56 | 1.00 | 41 | 0.57 | 1.00 | 206 | 0.9549 | 0.9553 |
| CEO Ownership | 0.09 | 0.05 | 41 | 0.07 | 0.03 | 206 | 0.1763 | 0.0112** |
| Board Size | 6.95 | 7.00 | 41 | 7.44 | 7.00 | 206 | 0.1187 | 0.3035 |
| Staggered | 0.24 | 0.00 | 41 | 0.17 | 0.00 | 206 | 0.2933 | 0.2414 |
| Golden Parachute | 0.17 | 0.00 | 41 | 0.16 | 0.00 | 206 | 0.8311 | 0.8265 |
| Stays as CEO | 0.12 | 0.00 | 41 | 0.26 | 0.00 | 206 | 0.0262** | 0.0619* |
| Board Position | 0.00 | 5.00 | 41 | 0.03 | 0.00 | 206 | 0.0139** | 0.2714 |
| **Panel A2: Post-2006** | | | | | | | | |
| CEO Age | 54.05 | 54.00 | 165 | 54.77 | 54.00 | 44 | 0.5753 | 0.6212 |
| CEO Tenure | 6.55 | 5.00 | 165 | 7.75 | 5.00 | 44 | 0.3732 | 0.8075 |
| Chairman | 0.34 | 0.00 | 165 | 0.41 | 1.00 | 44 | 0.4075 | 0.3924 |
| CEO Ownership | 0.04 | 0.02 | 165 | 0.05 | 0.02 | 44 | 0.4440 | 0.4700 |
| Board Size | 7.53 | 7.00 | 165 | 7.86 | 7.00 | 44 | 0.4278 | 0.8435 |
| Staggered | 0.15 | 0.00 | 165 | 0.14 | 0.00 | 44 | 0.8783 | 0.8807 |
| Golden Parachute | 0.46 | 0.00 | 165 | 0.34 | 0.00 | 44 | 0.1493 | 0.1562 |
| Stays as CEO | 0.28 | 0.00 | 165 | 0.20 | 0.00 | 44 | 0.2977 | 0.3236 |
| Board Position | 0.00 | 0.00 | 165 | 0.02 | 0.00 | 44 | 0.3329 | 0.0543* |

### 3.8.2 Multivariate Analysis of CEO and Board Characteristics

First, in Table 3.17, I report the results of my multivariate analysis in which target abnormal returns, calculated over the various windows around the tender offer announcement are the dependent variables. The difference is that now I also control for CEO and board characteristics. Again, I run separate regressions for my two time intervals, pre-2007 and post-2006. The first regression shows coefficients when I use target abnormal returns (-42, ex-date) as the dependent variable and use observations in the pre-2007 period. The regression coefficient on the variable of interest, *Top-up,* is significantly different from zero, with a p-value of 0.027. Among the CEO and Board characteristics I only find that *CEO Tenure* is positive and significant (p=0.028). Surprisingly, other than target Hostility, *M-to-B* and the *Delaware* dummy variables, none of the other variables are significant. In addition to statistical significance, the main result of this regression is economically significant as well. Ceteris paribus, the presence of a top-up option lowers target returns by about 13% during the period spanning 42 days prior to the announcement until the ex-date. Consistent with the univariate analysis the top-up dummy is statistically insignificant in the post-2006 period. I find results similar to the longest window when I start the calculation of abnormal returns only 20 days prior to the announcement. Again, consistent with my univariate analysis I do not find significance on the *Top-up* dummy variable when I limit the calculation of abnormal returns to the 3-day window. I conclude that the results are robust to inclusion of CEO and Board characteristics.

## Table 3.17 Target Returns and CEO and Board Characteristics

Below are OLS regressions where the dependent variable is the target announcement return. Announcement returns are cumulative abnormal returns (CARs) from -42 to +x date. CARs are calculated by subtracting the value-weighted return on the CRSP index from the firm return. *Top-up* (0/1) equals 1 if a top-up option is present and 0 otherwise. Definitions of all variables are explained in Appendix 4. Two-tailed White's heteroscedasticity-consistent *P*-values are in parentheses. ***, **, *: Significant at the 1%, 5%, and 10% level, respectively.

| | -42 – x date | | -20 – x date | | -1 to +1 | |
|---|---|---|---|---|---|---|
| | Pre-2007 | Post -2006 | Pre-2007 | Post -2006 | Pre-2007 | Post -2006 |
| Model | (1) | (2) | (3) | (4) | (5) | (6) |
| Top-up (0/1) | -0.1856** | -0.0112 | -0.2166*** | -0.1270 | -0.0637 | 0.0226 |
| | (0.027) | (0.916) | (0.008) | (0.250) | (0.349) | (0.801) |
| CEO Age | -0.0044 | 0.0023 | -0.0070 | 0.0016 | -0.0026 | -0.0005 |
| | (0.307) | (0.593) | (0.106) | (0.731) | (0.394) | (0.896) |
| CEO Tenure | 0.0098** | 0.0040 | 0.0100** | 0.0015 | 0.0080* | -0.0024 |
| | (0.028) | (0.414) | (0.035) | (0.784) | (0.067) | (0.626) |
| Chairman | 0.0275 | -0.1626** | 0.0162 | -0.1842** | -0.0571 | -0.0690 |
| | (0.722) | (0.027) | (0.833) | (0.013) | (0.312) | (0.270) |
| CEO Ownership | -0.6016 | -0.1573 | -0.4548 | -0.1025 | -0.1079 | 0.4930 |
| | (0.195) | (0.823) | (0.365) | (0.892) | (0.806) | (0.383) |
| Board Size | -0.0008 | 0.0224 | 0.0041 | 0.0169 | 0.0119 | 0.0087 |
| | (0.963) | (0.204) | (0.790) | (0.356) | (0.281) | (0.475) |
| Staggered | 0.0843 | 0.1950** | 0.0537 | 0.1662* | 0.0134 | 0.1414 |
| | (0.405) | (0.049) | (0.587) | (0.097) | (0.868) | (0.141) |
| Toehold | -0.0033 | 0.0016 | -0.0018 | 0.0017 | -0.0026 | -0.0051 |
| | (0.528) | (0.797) | (0.676) | (0.813) | (0.188) | (0.299) |
| Non-cash bid | 0.1332 | -0.1723* | 0.1169 | -0.1321* | 0.0990 | -0.1128 |
| | (0.156) | (0.072) | (0.221) | (0.198) | (0.182) | (0.220) |
| Hostile | -0.2291** | -0.0462 | -0.1564 | -0.1548 | -0.1066** | -0.1294* |
| | (0.049) | (0.642) | (0.165) | (0.152) | (0.042) | (0.084) |
| M- to-B | -0.0845*** | -0.0555** | -0.0761*** | -0.0448* | -0.0574*** | -0.0354 |
| | (0.000) | (0.032) | (0.001) | (0.096) | (0.000) | (0.133) |
| Leverage | -0.0639 | 0.3560* | -0.1361 | 0.3535* | -0.1660 | 0.3622** |
| | (0.759) | (0.056) | (0.523) | (0.077) | (0.115) | (0.038) |
| FCF | -0.0919 | -0.8655*** | -0.0187 | -0.8618** | 0.0283 | -0.5539*** |
| | (0.622) | (0.000) | (0.932) | (0.000) | (0.869) | (0.000) |
| Lnsize | 0.0234 | -0.0407 | 0.0201 | -0.0453 | -0.0025 | -0.0265 |
| | (0.360) | (0.166) | (0.391) | (0.142) | (0.893) | (0.153) |
| Termination Fee | -0.0585 | 0.0742 | -0.0620 | 0.0292 | -0.1306** | -0.0049 |
| | (0.545) | (0.348) | (0.463) | (0.712) | (0.024) | (0.948) |
| Lock-up option | 0.1395 | | 0.2481 | | 0.0901 | |
| | (0.406) | | (0.102) | | (0.511) | |
| Diversifying | 0.0470 | 0.0963* | 0.0487 | 0.1214** | 0.0555 | 0.1038* |
| | (0.496) | (0.099) | (0.473) | (0.042) | (0.240) | (0.051) |
| Private_Bidder | -0.0410 | -0.1799** | -0.0073 | -0.1209 | 0.0353 | -0.0665 |
| | (0.595) | (0.023) | (0.923) | (0.128) | (0.512) | (0.346) |
| Delaware | -0.1215* | 0.0791 | -0.0520* | 0.0402 | -0.0023 | 0.0429 |
| | (0.079) | (0.294) | (0.426) | (0.599) | (0.963) | (0.370) |
| Age | -0.0017 | -0.0006 | -0.0010 | -0.0005 | -0.0015* | -0.0002 |
| | (0.190) | (0.757) | (0.467) | (0.788) | (0.097) | (0.909) |
| Intercept | 0.9186*** | 0.4481*** | 0.9261*** | 0.6480** | 0.5723*** | 0.4575* |
| | (0.000) | (0.000) | (0.000) | (0.032) | (0.000) | (0.091) |
| Observations | 226 | 197 | 226 | 197 | 226 | 197 |
| R-squared | 0.147 | 0.287 | 0.126 | 0.292 | 0.120 | 0.219 |

Table 3.18. Logistic regressions of Top-up option and CEO and Board Characteristics

Below are logistic regressions of a dummy variable equal to 1 if a top-up option is present and 0 otherwise on various deal characteristics. Definitions of all variables are explained in Appendix 4. *P*-values are shown in parentheses. ***, **, *: Significant at the 1%, 5%, and 10% level, respectively.

| | Pre-2007 | | | Post-2006 | | |
|---|---|---|---|---|---|---|
| Model | (1) | (2) | (3) | (4) | (5) | (6) |
| CEO Age | -0.0685*** | -0.0686** | -0.0694** | 0.0220 | 0.0207 | -0.0811 |
| | (0.009) | (0.013) | (0.012) | (0.585) | (0.610) | (0.634) |
| CEO Tenure | 0.0039 | 0.0039 | 0.0050 | -0.0524 | -0.0522 | -0.0517 |
| | (0.908) | (0.909) | (0.882) | (0.319) | (0.322) | (0.323) |
| Chairman | 0.3830 | 0.3830 | 0.3843 | -0.1887 | -0.1873 | 0.1642 |
| | (0.377) | (0.377) | (0.374) | (0.795) | (0.797) | (0.820) |
| CEO Ownership | 1.2926 | 1.2930 | 1.0647 | -5.2361 | -5.1379 | -5.1189 |
| | (0.636) | (0.636) | (0.700) | (0.334) | (0.346) | (0.347) |
| Board Size | -0.0494 | -0.0493 | -0.0515 | -0.1389 | -0.1451 | -0.1479 |
| | (0.663) | (0.664) | (0.651) | (0.355) | (0.340) | (0.329) |
| Staggered | 0.5579 | 0.5579 | 0.5940 | 0.5941 | 0.5808 | -0.6625 |
| | (0.257) | (0.257) | (0.234) | (0.448) | (0.459) | (0.416) |
| Toehold | -0.0752 | -0.0752 | -0.0751 | -0.0811** | -0.0821** | -0.0829** |
| | (0.373) | (0.373) | (0.371) | (0.029) | (0.028) | (0.028) |
| Non-cash bid | -0.4624 | -0.4626 | -0.4730 | -0.9421 | -0.9411 | -0.9833 |
| | (0.444) | (0.444) | (0.434) | (0.245) | (0.246) | (0.227) |
| Hostile | 0.1396 | -0.1394 | -0.1468 | -4.4463*** | -4.4524*** | -4.3738*** |
| | (0.848) | (0.848) | (0.840) | (0.000) | (0.000) | (0.000) |
| M- to-B | 0.0133 | 0.0133 | 0.0157 | 0.3769 | 0.3775 | 0.3785 |
| | (0.921) | (0.921) | (0.908) | (0.178) | (0.177) | (0.177) |
| Leverage | -0.0028 | -0.0032 | 0.0667 | 0.5703 | 0.5749 | 0.6270 |
| | (0.998) | (0.997) | (0.946) | (0.644) | (0.641) | (0.610) |
| FCF | 1.1368 | 1.1364 | 1.1785 | 3.5460*** | 3.5401*** | 3.6775*** |
| | (0.226) | (0.228) | (0.214) | (0.007) | (0.007) | (0.006) |
| Lnsize | -0.2399 | -0.2401 | -0.2451 | -0.3916 | -0.4014 | -0.4098 |
| | (0.252) | (0.259) | (0.250) | (0.146) | (0.142) | (0.132) |
| Termination Fee | -1.7806 | -1.7805 | -1.7542 | -0.3020 | -0.2880 | -0.2909 |
| | (0.112) | (0.112) | (0.118) | (0.700) | (0.715) | (0.710) |
| Lock-up option | 2.5723*** | 2.5730*** | 2.5772*** | | | |
| | (0.004) | (0.005) | (0.004) | | | |
| Diversifying | 0.8657* | 0.8658* | 0.8792* | -1.6033** | -1.6232** | -1.5661** |
| | (0.072) | (0.073) | (0.069) | (0.028) | (0.027) | (0.034) |
| Private_Bidder | -0.2579 | -0.2579 | -0.2707 | -1.3374** | -1.3602** | -1.3355** |
| | (0.573) | (0.574) | (0.556) | (0.035) | (0.034) | (0.038) |
| Delaware | -0.4121 | 0.4124 | 0.4134 | 0.0969 | 0.1267 | 0.2014 |
| | (0.388) | (0.390) | (0.390) | (0.878) | (0.844) | (0.760) |
| Firm Age | | 0.0001 | 0.0009 | | 0.0028 | 0.0015 |
| | | (0.995) | (0.993) | | (0.831) | (0.911) |
| EAR | | | 0.0263 | | | -0.0769 |
| | | | (0.619) | | | (0.568) |
| Intercept | 2.2299 | 2.2315 | 2.1839 | 6.1823** | 6.2716** | 6.5823** |
| | (0.190) | (0.194) | (0.202) | (0.031) | (0.030) | (0.026) |
| N | 226 | 226 | 226 | 197 | 197 | 197 |
| Chi-square | 35.34 | 35.34 | 35.57 | 89.96 | 90.01 | 90.34 |
| | (0.009) | (0.013) | (0.017) | (0.000) | (0.000) | (0.000) |

Second, in Table 3.18 I examine the determinants of the use of top-up options by controlling CEO and board characteristics. I estimate a simple logistic regression (similar to Table 3.7), where the dependent variable is equal to 1 when the top-up option in included and zero otherwise. When I estimate Models 1-3, I find that only the *CEO Age* is negative and statistically significant for the pre-2007 period. This suggests that younger CEOs are more likely to grant top-up options. Also, in the pre-2007 period, other than diversifying, which is marginally significant, only the dummy variable for lock-up options has a significant and positive coefficient. This suggests that lock-up options and top-up options are positively related. When I estimate Models 4-6 I find that there are more variables related to the use of a top-up option in tender offers in the post-2006 period. However *CEO Age* loses its significance. I find that the regression coefficient on *Toehold* is significantly negative. This suggests that toeholds play a similar role in the post-2006 period as lock-up options did in the pre-2007 period. Not surprisingly, I find that hostility is negatively related to the use of lock-up options. On the other hand, the finding that the private bidder dummy is negatively related to the use of top-up options is contradictive to suggestions that private bidders are more likely to use these options. Finally, I find that target free cash flows (size and diversifying merger dummy) are positively (negatively) related to the use of top-up options. These results are similar to those in Table 3.7.

**3.9 Conclusions**

This study investigates the consequences of using top-up options in tender offers as well as some of the potential determinants for using this tender offer feature which decreases the time to completion of tender offers and allows bidders to bypass target shareholder approval. I find that the use of these options is most consistent with an "anti-competitive hypothesis" as target and bidder abnormal returns are lower when a top-up option is included in the deal. Additional analysis reveals that these results are driven by top-up options used in the period prior to 2007.

My results are robust and remain intact when I control for a host of variables that previous literature suggests to be related to abnormal returns surrounding M&A activity. Further, I find that in the pre-2007 period the use of lock-up options is positively related to the use of top-up options. In the later period, when lock-up options are no longer used in the tender offers that I study, I find that toeholds are negatively related to the use of top-up options. This suggests that toeholds may have taken the place of lock-up options. Moreover, top-up options increase the speed of deal completion and are associated with less hostility, higher target free cash flows, and higher termination fees.

# Chapter 4

## Summary and Conclusion

The two essays of this dissertation contribute to the current literature by empirically documenting the role of authorized shares in corporate events. In the first essay, I examine the effects of excess authorized shares on the announcement of split returns. I explore a new variable that explains the stock split returns based on a new measure of agency costs. Specifically, I examine the relation between management`s power to issue new shares of stock and stock split abnormal announcement returns. I posit that the mechanical reduction in unissued (excess) authorized shares caused by a stock split, decreases management`s power to issue stock. I argue that this results in lower agency costs and thereby increases shareholder`s value. After controlling for other factors, and consistent with my hypothesis, I find that the pre-split ratio of unissued authorized shares to total outstanding shares (Excess Authorized Ratio) is positively related to the abnormal stock split announcement returns. My analysis suggests nontrivial economic benefits accrue to shareholders from a reduction in management's power to issue stock and firms that have a higher pre-split excess ratio benefit the most.

In the second essay, I examine the consequences of using top-up options in tender offers as well as some of the potential determinants for using this tender offer feature which decreases the time to completion of tender offers and allows bidders to bypass target shareholder approval. I find that the use of these options is most consistent with an "anti-competitive hypothesis" as target and bidder abnormal returns are lower when a top-up option is included in the deal. Additional analysis reveals that these results are driven by top-up options used in the period prior to 2007. My results are robust and remain intact when I control for a host of variables that previous literature suggests are related to abnormal returns surrounding M&A activity. Further, I find that in the pre-2007

period the use of lock-up options is positively related to the use of top-up options. In the later period, when lock-up options are no longer used in the tender offers that I study, I find that toeholds are negatively related to the use of top-up options. This suggests that toeholds may have taken the place of lock-up options. Moreover, I document that top-up option increases the speed of deal completion and are associated with less hostility, higher target free cash flows, and higher termination fees.

## Appendix 1: Excerpt from Hewlett Packard Company's DEF 14A

The following is an excerpt from Hewlett Packard Company's DEF 14A filing dated January 25, 2001. The document in its entirety can be found on the SEC's Electronic Data Gathering and Retrieval system at:

http://www.sec.gov/Archives/edgar/data/47217/000091205701002700/0000912057-01-02700.txt

PROPOSAL NO. 2

AMENDMENT OF THE COMPANY'S CERTIFICATE OF INCORPORATION TO INCREASE THE NUMBER OF AUTHORIZED SHARES

The Company's Certificate of Incorporation currently authorizes the issuance of four billion eight hundred million (4,800,000,000) shares of common stock, with a par value of one cent ($.01) per share, and 300,000,000 shares of preferred stock, with a par value of one cent ($.01) per share. In November 2000, the Board of Directors adopted a resolution proposing that the Certificate of Incorporation be amended to increase the authorized number of shares of common stock to nine billion six hundred million (9,600,000,000), subject to stockholder approval of the amendment.

OUR BOARD OF DIRECTORS RECOMMENDS A VOTE FOR THE APPROVAL OF THE AMENDMENT OF THE COMPANY'S CERTIFICATE OF INCORPORATION TO INCREASE THE NUMBER OF AUTHORIZED SHARES.

VOTE REQUIRED

Approval of the proposal requires the affirmative vote of the majority of shares of common stock present or represented by proxy and entitled to vote at the meeting.

PROPOSED AMENDMENT

As of December 29, 2000, the Company had approximately 1,932,546,000 shares of common stock outstanding and approximately 508,417,000 shares reserved for future issuance under the Company's employee stock plans, of which approximately 171,858,000 shares are covered by outstanding options and approximately 336,559,000 shares are available for grant. In addition, the Company has approximately 13,586,000 shares reserved for issuance in connection with the acquisition of Bluestone Software, Inc. and approximately 21,817,000 shares reserved for issuance upon conversion of the Company's Liquid Yield Option Notes due 2017 and outstanding warrants. Based upon the foregoing number of outstanding and reserved shares of common stock, the Company currently has approximately 2,323,634,000 shares remaining available for other purposes.

The following is the text of the first paragraph of Article IV of the Certificate of Incorporation of the Company, including the proposed amendment to the second sentence thereof:

The Corporation is authorized to issue two classes of stock to be designated, respectively, Preferred Stock, par value $0.01 per share ("Preferred"), and Common Stock, par value $0.01 per share ("Common"). The total number of shares of Common that the Corporation shall have authority to issue is 9,600,000,000. The total number of shares of Preferred that the Corporation shall have authority to issue is 300,000,000. The Preferred Stock may be issued from time to time in one or more series.

PURPOSE AND EFFECT OF THE PROPOSED AMENDMENT

The Board of Directors believes that the availability of additional authorized but unissued shares will provide the Company with the flexibility to issue common stock for a variety of corporate purposes, such as to effect future stock splits in the form of stock dividends, to make acquisitions through the use of stock, to raise equity capital, to adopt additional employee benefit plans or to reserve additional shares for issuance under such plans and under plans of acquired companies.

Increasing the number of shares of common stock that the Company is authorized to issue would give the Company additional flexibility with respect to future stock splits and stock dividends. On seven occasions the Company has effected either a stock split or a stock dividend in the form of a stock split. The last such action was a 2-for-1 stock split in the form of a stock dividend payable in October 2000. Also in 2000, the Company agreed to issue approximately 13,586,000 shares of common stock to acquire Bluestone Software, Inc.

The Board of Directors believes that the proposed increase in authorized common stock would facilitate the Company's ability to accomplish stock splits in the form of a stock dividend and other business and financial objectives in the future without the necessity of delaying such activities for further shareowner approval, except as may be required in particular cases by the Company's charter documents, applicable law or the rules of any stock exchange or national securities association trading system on which the Company's securities may then be listed. Other than as permitted or required under the Company's employee benefit plans and under outstanding options, warrants and other securities convertible into common stock, and the acquisition described above, the Board of Directors has no immediate plans, understandings, agreements or commitments to issue additional common stock for any purposes. Whether or not the Company's shareowners approve this proposal will not impact the Company's existing agreements to issue stock, including pursuant to the acquisition described above. No additional action or authorization by the Company's shareowners would be necessary prior to the issuance of such additional shares, unless required by applicable law or the rules of any stock exchange or national securities association trading system on which the common stock is then listed or quoted. The Company reserves the right to seek a further increase in authorized shares from time to time in the future as considered appropriate by the Board of Directors.

Under the Company's Certificate of Incorporation, the Company's shareowners do not have preemptive rights with respect to common stock. Thus, should the Board of Directors elect to issue additional shares of common stock, existing shareowners would not have any preferential rights

to purchase such shares. If the Board of Directors elects to issue additional shares of common stock, such issuance could have a dilutive effect on the earnings per share, book value per share voting power and shareholdings of current shareowners.

The proposal could have an anti-takeover effect, although that is not its intention. For example, if the Company were the subject of a hostile takeover attempt, it could try to impede the takeover by issuing shares of common stock, thereby diluting the voting power of the other outstanding shares and increasing the potential cost of the takeover. The availability of this defensive strategy to the Company could discourage unsolicited takeover attempts, thereby limiting the opportunity for the Company's shareowners to realize a higher price for their shares than is generally available in the public markets. The Board of Directors is not aware of any attempt, or contemplated attempt, to acquire control of the Company, and this proposal is not being presented with the intent that it be utilized as a type of anti-takeover device. In addition to the Company's common stock, the Company's Certificate currently empowers the Board of Directors to authorize the issuance of one or more series of preferred stock without shareowner approval. No shares of preferred stock of the Company are issued or outstanding. No change to the Company's preferred stock authorization is requested by the Amendment.

If the proposed amendment is adopted, it will become effective upon filing of a Certificate of Amendment to the Company's Certificate of Incorporation with the Delaware Secretary of State. However, if the Company's shareowners approve the proposed amendment to the Company's Certificate of Incorporation, the Board retains discretion under Delaware law not to implement the proposed amendment. If the Board exercised such discretion, the number of authorized shares would remain at current levels.

## Appendix 2: A Stylized Model for the Determination of Optimal Excess Authorized Shares

Since this variable is relatively unstudied in the literature, we propose a relatively straightforward framework with which to view the level of EAS.[40] The level of EAS selected by the firm is the result of minimizing the total costs related to EAS. These costs take two forms. First, as the level of EAS increases, there will be an increase in the power that is held by the firm's management and a concomitant decrease in power held by the shareholders. This will lead to a greater need to monitor managers and result in an increase of agency costs. In my simplified model, we assume that the agency costs are increasing in EAS at an increasing rate. From a practical point of view, this function makes intuitive sense. Very low levels of EAS (EAS less than the amount of shares outstanding) do not grant much power to managers. Such levels would only allow managers to implement small seasoned equity issues or engage in small stock mergers. Even moderate levels of EAS would prevent managers from engaging in some takeover strategies that require higher levels of EAS. It is only the very highest levels of EAS that require shareholders to more closely monitor management.

The second cost related to EAS is what we term transaction costs. These costs can take several forms and are decreasing in EAS at a decreasing rate. First, they include the direct costs related to the process of increasing the EAS. That is, if a firm has a low level of EAS and wishes to engage in some corporate activity that requires additional shares, the firm must first obtain permission from the shareholders (in practice, this is sometimes done at a special meeting of the shareholders called expressly for the purpose of increasing the level of authorized shares). A second cost that we group under the 'transaction cost' category is the potential that the firm will forgo a particular activity because it does not have sufficient EAS. This can be thought of as a positive NPV project

[40] While I do not directly test the construct that I describe herein, it provides the reader with a brief background of how an optimal level of EAS may come about. Clearly, this optimal level may vary from firm to firm and the concepts presented here are developed further in a related working paper, Elliott and Songur (2013).

that may only be available for a limited time, or one in which a competitor may be able to begin more quickly because they have sufficient EAS. For example, a stock-based merger could be one such project.

Between the agency costs (which are increasing in EAS) and the transaction costs (which are decreasing in EAS) an optimal level of excess authorized shares exists, which minimizes the sum of these two costs. Figure A2.1 presents this concept graphically.

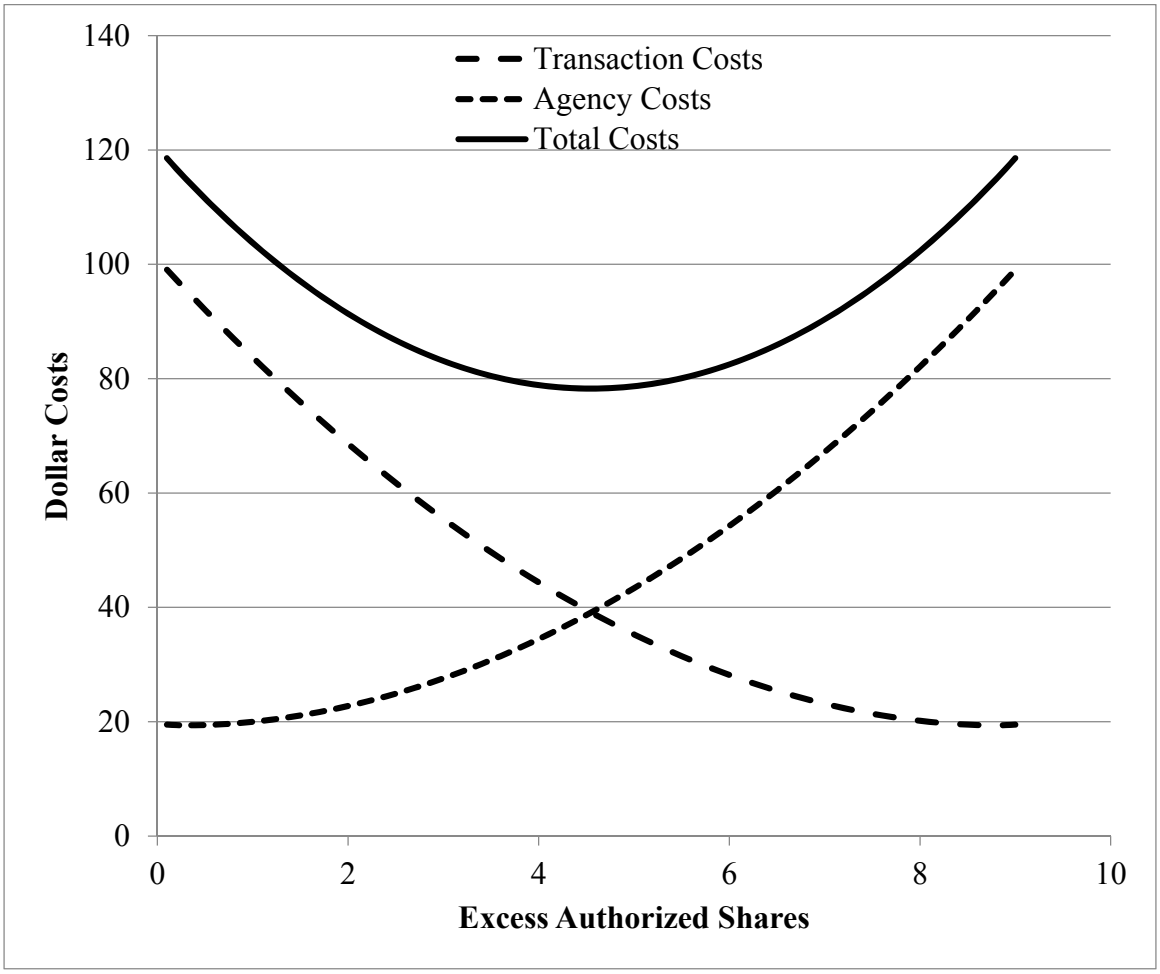


Figure A2.1 Optimal level of excess authorized shares.

This trade-off between agency costs and transaction costs clearly does not capture the entirety of the actions related to the decision to split a firm's shares. However, at the margin it may play a

role. Further, the firms in my sample, namely firms that have enjoyed a run-up in share price, may not face the same type of agency costs related to EAS that non-splitting firms may face. In fact, the shareholders of splitting firms may be much less concerned by agency costs (which may be an irrational response to the current success of the firm), when their managers have been successful in increasing the value of the firm. However, for my purposes this will bias against finding a result in my empirical analysis.

## Appendix 3: Burger King SEC Tender Offer Filing

The following is an excerpt from Burger King's SC TO-T filing dated September 16, 2010. The document in its entirety can be found on the SEC's Electronic Data Gathering and Retrieval system at:

http://www.sec.gov/Archives/edgar/data/1352801/000095012310086742/y86597exv99waw1wa.htm

"Pursuant to the Merger Agreement, Burger King granted to Purchaser an irrevocable right to purchase additional Shares at a price per share equal to the Offer Price that, when added to the number of Shares owned by Parent, Purchaser and any of their wholly-owned subsidiaries immediately prior to the time of such exercise, will constitute at least one share more than 90% of the Shares then outstanding (after giving effect to the Top-Up). The Top-Up is intended to expedite the timing of the completion of the Merger by permitting the Merger to occur pursuant to Delaware's short-form merger statute. Purchaser is required to exercise the Top-Up if Purchaser does not own at least 90% of the outstanding Shares immediately after it accepts for purchase all of the shares validly tendered and not withdrawn. Simultaneously with the consummation of the Offer, Purchaser shall pay to Burger King the purchase price owed by Purchaser to Burger King to purchase that number of newly issued, fully paid and nonassessable shares of Burger King common stock required to effect the Top-Up, at Purchaser's option, (i) in cash, by wire transfer of same-day funds, or (ii) by (x) paying in cash, by wire transfer of same-day funds, an amount equal to not less than the aggregate par value of the such newly issued shares of Burger King common stock and (y) executing and delivering to Burger King a promissory note, with such terms as specified in the Merger Agreement, having a principal amount equal to the aggregate purchase price pursuant to the Top-Up less the amount paid in cash.

If, following the Offer, Parent, Purchaser and any other subsidiary of Parent collectively at least own 90% of the outstanding Shares, Parent, Purchaser and Burger King shall take all necessary and appropriate action to consummate the Merger as a short-form merger as soon as practicable without a meeting of stockholders of Burger King in accordance with the DGCL."

http://www.sec.gov/Archives/edgar/data/1352801/000095012310093358/y86864asctovtza.htm

"The Offer and withdrawal rights expired at midnight, New York City time, on October 14, 2010. The Depositary has advised us that 128,192,385.1523 Shares were validly tendered and not properly withdrawn (including 7,047,235.9946 Shares tendered pursuant to notices of guaranteed delivery). All Shares that were validly tendered and not properly withdrawn have been accepted for purchase and paid for by Purchaser. Purchaser also exercised its Top-Up, pursuant to which Burger King issued Shares to Purchaser, at a price per Share equal to the Offer

Price, in an amount sufficient to ensure that Purchaser and Parent could effect a short-form merger under applicable Delaware Law.

As a result of the purchase of Shares in the Offer and the issuance of Shares pursuant to the Top-Up, Purchaser and Parent will have sufficient voting power to approve the Merger without the affirmative vote of any other stockholder of Burger King. Accordingly, Purchaser and Parent intend to effect a “short form” merger in which Purchaser is merged with and into Burger King, with Burger King surviving the Merger and continuing as a wholly-owned subsidiary of Parent. In the Merger, each Share issued and outstanding immediately prior to the effective time of the Merger, other than Shares owned by Parent or Purchaser immediately prior to the effective time of the Merger, or any stockholder of Burger King who is entitled to and properly exercises appraisal rights under Delaware law, will automatically be converted into the right to receive the Offer Price in cash, without interest and less any applicable withholding taxes. All shares converted into the right to receive the Offer Price shall be canceled and cease to exist.

On October 15, 2010, 3G Capital issued a press release announcing the expiration and results of the Offer. The full text of the press release is attached hereto as Exhibit (a)(1)(K) and is incorporated herein by reference.”

## Appendix 4: Variable Definitions

| Variable | Definition | Source |
|---|---|---|
| *Deal Outcomes* | | |
| CAR -42 – x date | market adjusted returns where the market return is CRSP value weighted index from 42 days prior to announcement until completion or | CRSP, SDC |
| CAR -20 – x date | market adjusted returns where the market return is CRSP value weighted index from 20 days prior to announcement until completion or withdrawal of the deal | CRSP, SDC |
| CAR -1+1 | market adjusted returns where the market return is CRSP value weighted index from 1 day prior and 1 day after the announcement. | CRSP, SDC |
| *Deal Characteristics* | | |
| Deal size ($10^6$) | The dollar amount of the transaction. | SDC |
| Toehold (%) | The percent of toehold held by the bidder at deal announcement. | SDC |
| Non-cash bid | A dummy variable that takes the value of one if non-cash payment is included as consideration in the offer | SDC |
| Hostile | A dummy variable that takes the value of one if an offer is unsolicited. | SDC |
| Termination Fee | A dummy variable that takes the value of one if a termination fee is included in the offer. | SDC |
| Lock-up option | A dummy variable that takes the value of one if a lockup option is included. | SDC |
| Diversifying | A dummy variable that takes the value of one if the bidder and target share the same four-digit primary SIC code. | Compustat |
| Completion | A dummy variable that takes the value of one if the tender offer is successful. | SDC |
| Delaware | A dummy variable that takes the value of one if the target firm is incorporated in Delaware. | Compustat |
| Duration | Number of days from the offer announcement until completion or withdrawal of the deal | SDC |
| Relative Value | Target market capitalization divided by Acquirer market capitalization 42 days prior to announcement. | CRSP |
| Private Bidder | A dummy variable that takes the value of one if the bidder firm is a private firm. | SDC |
| *Firm Characteristics* | | |
| Lnsize | Log of total assets. | Compustat |
| M-to-B | Total assets minus book value of equity plus market value of equity, all divided by total assets. | Compustat |
| Tobin's Q | Market value of assets divided by book value of total assets (AT), where market value of assets is book value of total assets (AT) less book value of equity (CEQ) plus market value of equity (CSHO * PRCC_F) | Compustat |
| FCF (Free cash flow) | Operating income before depreciation minus total income taxes (less the change in deferred taxes from the previous to the current year) minus preferred and common stock dividends, all divided by total assets. | Compustat |
| Leverage | Long-term and current liabilities divided by total assets. | Compustat |
| Profitability | Operating income before depreciation scaled by total assets. | Compustat |
| Stdev of returns | Standard deviation of stock returns over period from trading day -253 to -45 relative to the announcement date. | CRSP |

**Appendix 4: Variable Definitions contd.**

| Variable | Definition | Source |
|---|---|---|
| Age of Target | Age of the target calculated in years as the difference between the year of the announcement and the year of foundation/incorporation. | bear.warrington.ufl.edu/ritter/, SEC Edgar |
| *CEO and Board Characteristics* | | |
| CEO Age | Age of the CEO | SEC Edgar |
| CEO Tenure | Number of years CEO at the office | SEC Edgar |
| Chairman | A dummy variable that takes the value of one if a CEO I also the Chairman of the Board | SEC Edgar |
| CEO Ownership | CEO shares/Total shares outstanding | SEC Edgar, CRSP |
| Golden Parachute | A dummy variable that takes the value of one if Golden Parachute exists | SEC Edgar |
| Retirement | 65 minus CEO age. | SEC Edgar |
| Board Size | Number of members of the board. | SEC Edgar |
| Staggered | A dummy variable that takes the value of one if the board is staggered | SEC Edgar |
| Stay as CEO | A dummy variable that takes the value of one if the Target CEO stays as CEO after the merger. | SEC Edgar |
| Board Position | A dummy variable that takes the value of one if the Target CEO starts to work in the Board of the Acquirer. | SEC Edgar |

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# Vita

Dr. Hilmi Songur, the second son of Mrs. *Nadiye Songur* and Mr. *Durmuş Songur*, raised in Istanbul, Turkey. He earned a B.Sc. in Economics with honors from Kadir Has University (KHU) in 2006 and an MBA in Finance degree at the Ball State University (BSU) in 2007. In the course of his MBA studies at the BSU he worked as a graduate assistant in the Department of Economics and tutored econometrics and statistic classes. After earning his MBA degree, he taught at the KHU from 2008 to 2010. During that period, he was also a researcher at the EMGP Project.

Dr. Songur entered the Ph.D. Program in International Business with a major in Finance at the University of Texas at El Paso in 2010. He has taught several Finance and Economics courses during his career including Investments, Financial Analysis, and Principles of Economics. He received several honors and awards including *Excellence in Teaching Award, Dodson Research Fellowship,* and *Frank B. Cotton Trust Scholarship.* Dr. Songur presented his research at several prestigious academic conferences including the *Financial Management Association International, American Accounting Association, Eastern Finance Association,* and *Southwestern Finance Association* Annual Meetings.

Permanent address: 1920 N. Mesa, Apt 1920

El Paso, TX 79902

This dissertation was typed by Hilmi Songur (author).